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COMPUTERWORLD

INSIDE

Dual-bus clone built

Support for both PS/2 and AT cards pledged

BY JAMES A. MARTIN
CW STAFF

EVERETT, Mass. — Microdirect, Inc., a little-known PC vendor, is hoping to make a big splash at Comdex/Spring '88 with an industry first — an Intel Corp. 80386-based microcomputer compatible with both IBM PS/2 Micro Channel and Personal Computer AT buses.

Microdirect's 386 system, slated to be formally unveiled at Comdex next week and shipped in July, was designed to bridge the gap between the PC AT and the PS/2 as well as significantly increase I/O speeds through an

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Cullinet layoff wave imminent

BY ROSEMARY HAMILTON and NELL MARGOLIS
CW STAFF

WESTWOOD, Mass. — The guillotine is set to fall today at Cullinet Software, Inc.

Although the company offered an official "no comment" and officers declined to return phone calls, a reliable source within Cullinet confirmed that a major layoff of hundreds of employees and several executive departures will be announced this morning along with other belt-tightening measures.

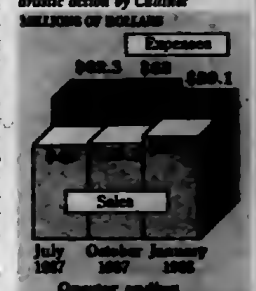
And while industry analysts said this is a necessary move that Cullinet must make to return to profitability, it appears not to be the only problem Cullinet must address. The Cullinet source confirmed last week that a number of products scheduled for release this year have been delayed. However, the delays are believed to involve new releases of existing applications and do not represent serious problems.

The Cullinet source said the company will notify analysts today of a "major restructuring within the company, including some new key vice-presidents." He said at least two executives will resign, including James Fitts, an appointee of former Chairman David Chapman who served as executive vice-president of finance and administration, and David Ireland, senior vice-president of customer support.

The announcement will also include a description of the personnel cutback, which is expected to affect between 400 and 500 people, observers said.

Adding it up

Expenses that continue to outpace sales are expected to prompt drastic action by Cullinet



CW CHART

Long time coming

"This is what should have been done in 1985 or 1986," said Charlotte Walker, a vice-president at County Securities Corp. "They tried to maintain capacity while redoing their product line. They should have immediately cut back."

Industry observers said Cullinet may also sell off smaller segments that are not central to the company's business and postpone some development efforts.

Company officials have long maintained Cullinet's high-profile new business segments, such as its banking software and its still-undefined relationship with Digital Equipment Corp., would not be axed. Industry speculation has pointed to at least two segments that may be sliced out of the picture — the Computer

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Gene Amdahl returns

Leads third mainframe start-up, targets 3090

BY J. A. SAVAGE
CW STAFF

CUPERTINO, Calif. — Gene Amdahl says his golf game is not good enough to keep him away from the computer business. So by next year, he says, he will be ready to take another swing at IBM's mainframe market with a start-up, Andor Systems, Inc.

Amdahl, associated with one of the greatest successes as well as one of the most spectacular failures in mainframe computing, has been working nights and weekends with his eight-person staff to design a machine to compete most directly with IBM's 3090 Model 150.

This is the third attempt by Amdahl, who was one of the key architects of IBM's 360 system in the 1960s, to wrest IBM's vise grip off some of the mainframe market. He hopes to emulate the success he experienced founding mainframe manufacturer Amdahl Corp. in the 1970s rather than the fiasco of the later Trilogy Systems Corp.

Gene Amdahl

Amdahl said the as-yet-nameless computer will run between 7.5 and 10 million instructions per second using IBM's MVS, will cost very little to manufacture and will be priced about 15% less than the 3090.

The computer, which Amdahl jokingly refers to as "K2" (a mountainous allusion to the "Summit" code name of IBM's next mainframe generation), will be only about 24 by 24 in. and shallow.

"You want the base to be broad enough so it won't tip over, of course," Amdahl said.

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True compatibility

BY KATHY CHIN LEONG
CW STAFF

He was the director of information systems at Morton Thiokol, Inc. She, the director of systems development at Avon Products, Inc.

And, building on a common love of technology and systems strategy, an MIS romance was ignited — nearly eight years ago in Palm Springs, Calif., at a Diebold, Inc. conference for information systems directors.

"We met over dinner with a group of people from the seminar, and we found that we had a lot of similar interests," recalls John Hammitt, now vice-president of information systems management at Pillsbury Co.

"There was just that immediate rapport, a sense of feeling at ease and comfortable," concurs his wife, Joanne Pisani. During the next three years, Hammitt and Pisani, now an MIS consultant at Coopers & Lybrand, courted and corresponded from their respective homes in Chicago and New York. They were married in 1983 and now live in Minneapolis.

Who says love and technology don't mix? It is fairly common for people in the same profession to meet each other

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IN THIS ISSUE

Stress factor. Stratus, Sybase unite OLTP technologies and bear the SQL/2000 relational DBMS, which is among the jointly developed products some expect will cause headaches for Tandem today, DEC tomorrow. Page 6.

Net profits. 3Com introduces 3+SNA, saying it provides a gateway between IBM PC and PS/2 users on a 3+ network and host systems in an SNA environment. Page 14.

Quotable

"We will be a mosquito on the side of IBM. But we hope to be one that's satiated with blood."

GENE AMDAHL
ANDOR CORP.

See story page 1.

Glasnost eases high-tech move into Soviet Union

BY CLINTON WILDER
CW STAFF

FRAMINGHAM, Mass. — The world's largest nation has never been noted for computer use, but this is rapidly changing under Soviet Union leader Mikhail Gorbachev's *glasnost* economic policies.

The easing of government control under *glasnost* has allowed computers to gain some momentum in the USSR, according to Eugene N. Salnicov, director of Moscow-based Radio I Sviaz Publishers. Last week, Salnicov signed an agreement here with IDG Communications, Inc. to jointly publish the USSR's first computer magazine, *PC World USSR*.

IDG Communications is a publishing group that includes *Computerworld*, *PC World*, *Infoworld* and more than 100 computer-related publications in 36 countries.

'Indirect consequence'

"When we didn't have *glasnost*, we still had new technology," Salnicov said through an interpreter. "But the new economic theory means easier introduction of new technology. It has been an indirect consequence."

In addition to sparking interest in personal computers, *glasnost* paved the way for *PC World USSR* by granting Soviet publishing houses autonomy over what they can report.

Soviet government representatives are members of Radio I Sviaz's editorial group, and Salnicov was accompanied on his U.S. tour by a representative of the USSR State Committee for Publishing. But Radio I Sviaz does not rely solely on government information. "We can collect information from all over society," Salnicov said. "The main thing is that it should be reliable and interesting information. We must assure the accuracy of the information."

Salnicov said the Gorbachev government has been emphasizing the increasing use of computers. There are about 100,000 PCs in the USSR, about 20,000 of those in Moscow, according to the Soviet Embassy in Washington, D.C. Many are IBM machines, and IBM maintains a Moscow office.

Starting as a quarterly publication and debuting next month, *PC World USSR* will cover the use of microcomputers in education, government and trade. Articles will focus on new technology developments in the USSR and overseas.

IBM devises U.S., Europe data transfer

BY PATRICIA KEEFE
CW STAFF

RYE BROOK, N.Y. — IBM said last week it is now offering international network services said to enable customers in the U.S. and 12 European countries to exchange interactive data for the first time with their trading partners.

The services are part of the Intercontinental Information Services product family and will be made available via IBM's Information Network, a commercial value-added network. IBM already offers electronic messaging and batch data transferring to more than 50 countries.

Reportedly, the services allow Information Network users to exchange business information, such as electronic mail, and electronic data interchange-based forms, such as orders, invoices and shipping notices. In addition, users gain access to online data bases and applications, IBM said.

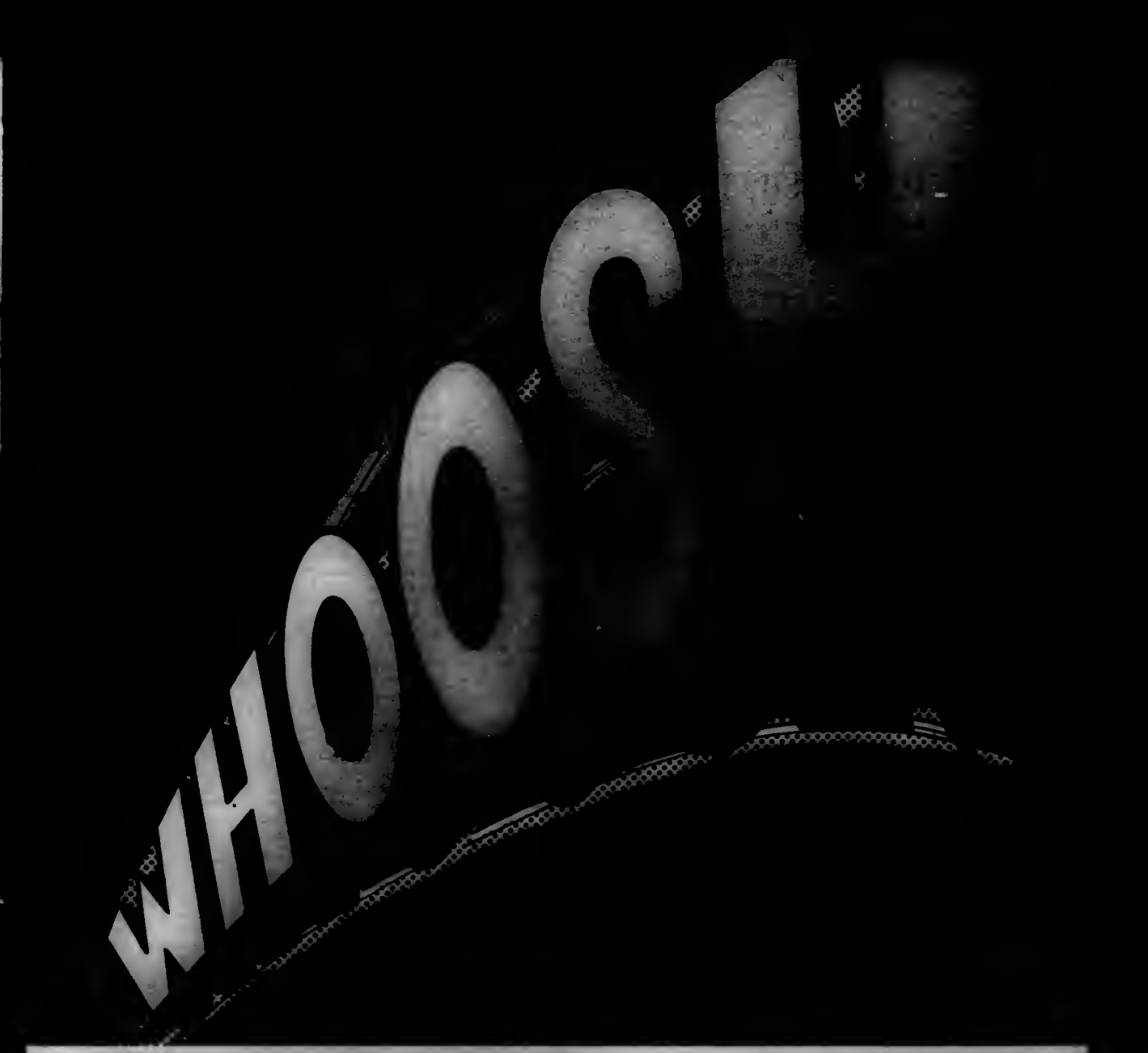
U.S. customers will be able to access the services via Information Network's 276 domestic connection points. Overseas users will gain access via attachment to local connection points planned for appropriately equipped host computers and terminal devices.

It's a small world

In addition to the U.S., these services will be made available in Austria, Belgium, Canada, Denmark, France, Italy, the Netherlands, Norway, Spain, Switzerland, the UK and West Germany.

The services include Virtual Storage Personal Computing (VSPC), Application Systems, TSO, MVS, batch via TSO, RJE and VSPC submits, as well as Professional Office System (Profs)-to-Profs messaging, International Business Service Data Transfer and screen mail, a spokesman said.

Pricing per processing unit includes $1.04 each for VSPC and TSO and 97 cents for MVS batch. On-line storage costs per megabyte per day utilized are $3.76 for VSPC, and per M byte per day stored, $1.96 each for TSO and MVS batch. Initial registration is $71 per mailbox, while the monthly mailbox charge is $24.71 per box.



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Frank King issues Lotus decrees

Says vaporware era over, development and delivery take front seat

BY DOUGLAS BARNEY
CW STAFF

CAMBRIDGE, Mass. — Newly appointed Vice-President Frank King intends to crack the whip at Lotus Development Corp., bringing discipline to an unwieldly group of some 700 software developers that has so far failed to ship a raft of critical new products.

"I am here to develop application systems and bring more development discipline," King said last week in his first interview since joining Lotus.

But one thing King will decline to work at is preannouncing products, a Lotus practice that has drawn much criticism and given the firm 11 products on the vaporware list. "I want us to talk about development activities when they are done," King explained.

Unlike a new U.S. president, King has not enjoyed a honeymoon period since he joined the firm as senior vice-president of Lotus's Software Products Group in March, just a week after the company announced a near six-month delay of 1-2-3 Release 3. This next version of 1-2-3, arguably Lotus's most important product ever, works but is simply too big for today's Microsoft Corp. MS-DOS.

The problem with 1-2-3 Release 3 illustrates why Lotus hired King to head up its software development efforts. A lack of discipline and communication among the various Release 3 development teams created a product too big for MS-DOS's britches, analysts said.

> "I AM HERE TO develop application systems and bring more development discipline."
>
> FRANK KING
> LOTUS DEVELOPMENT CORP.

But Release 3 is only one of King's worries. He has also inherited the task of getting 10 other announced products to market: Modern Jazz, Agenda, Notes, Symphony Release 3.0, 1-2-3 for Unix, 1-2-3/M, 1-2-3/G, 1-2-3/Mac, Blueprint and Lotus/DBMS. The bulk of these products were announced long before hitting the beta-test circuit, building user expectations and frustration because of the long development time frames.

In light of its large number of developers, Lotus has been surprisingly short on deliveries, analysts said. "Look at the number of people they have in research and development and you say, 'Where are the products?' The company is long on promises and short on delivery," said Rick Sherlund, a software analyst at Goldman, Sachs & Co.

That could change as King, the former vice-president of IBM's Entry Systems Division and key developer of DB2 and SQL/DS, tackles the development problems.

Despite heat from users and Wall Street, King says he believes Lotus needs little more than a tune-up. "We need to tune, and we need to be more formal in some areas, but in no sense do we need to fundamentally change the development process," he said.

King has already held a tighter rein on the development process with daily code error reports and has taken a hard look at current projects.

On his IBM Personal System/2, King uses an internal electronic mail system that runs under OS/2 to get data on code errors and development status — a system that was up and running during the exclusive *Computerworld* interview.

"I can't exist unless I know the details. Every day I get reports on the number of errors that were found the previous day in various pieces of code," King said.

Besides daily error reports, King is expected to step up overall code reviews and has modified the development structure at Lotus. Now, certain individuals are responsible for particular functions, such as external communications, across the entire product line.

It is not enough, however, for Lotus products to hit dealers' shelves. The firm has the added burden of making those products work together and share data effectively — a goal the company hopes to achieve with its shifts in management.

Based largely on a reputation established at IBM, analysts said they believe King is up for the job. "He brings the ability to manage lots of programmers, knows how to set up timetables, keep tabs on things and make sure development projects are on schedule. That is what he is there for," said Scott Smith, a software analyst at Donaldson, Lufkin & Jenrette, Inc.

The last thing King intends is to disappoint Lotus customers by not delivering on its promises. "We will get it done," he stated.

Wang teams with Banyan, targets PC LAN market

BY JAMES DALY
CW STAFF

NEW YORK — Wang Laboratories, Inc. has decided that if you can't beat 'em, you may as well join 'em and last week launched a broad foray into the PC LAN market that has been nibbling away at the low end of its departmental computer sales.

Leading the charge of a multipronged line of local-area network products and services is the Wang PC LAN, a set of software and hardware products that link the Wang PC 200 and 300 series and IBM Personal Computer compatibles into work group and departmental computing systems.

At the heart of the line is a series of network servers — the LS-10, LS-20 and LS-100 — supporting the Banyan Systems, Inc. Virtual Networking Software (Vines). Wang said it will also sell, service and support Vines/286 and Vines/386 as well as Banyan's high-end CNS LAN server.

"Every minicomputer vendor has been severely hurt by the influx of PC LANs, and this arrangement immediately gives Wang something they've needed: an inroad into the LAN marketplace with a company that is well established in that field," said Doug Gold, an analyst at Framingham, Mass.-based International Data Corp.

Last year, Hewlett-Packard Co. teamed with Microsoft Corp. for the LAN Manager with Unix, and analysts predict similar arrangements will emerge down the road.

The LS-10 and LS-50 servers will be priced at $8,625 and $11,035, respectively.

Vines/286 for the LS-10 is priced at $1,895, and Vines/386 for the LS-50 will cost $4,995. The price for the LS-100 server, which includes Vines and the CNS server, will range from $21,995 to $27,395. All will be available this month.

The Lowell, Mass.-based firm said that their Wang PC LAN does not supercede Wangnet, its current network offering. "It's a completely different product," said Gerry Paul, Wang's vice-president of systems for research and development. "Wangnet is a cabling system that provides multiple services, like running traditional Wang workstation protocols, as well as Ethernet. The Wang PC LAN can run on top of Wangnet."

Wang also announced PC LAN/VS Access, a set of communications software products that give PC LAN users access to applications and services on Wang's VS minicomputers.

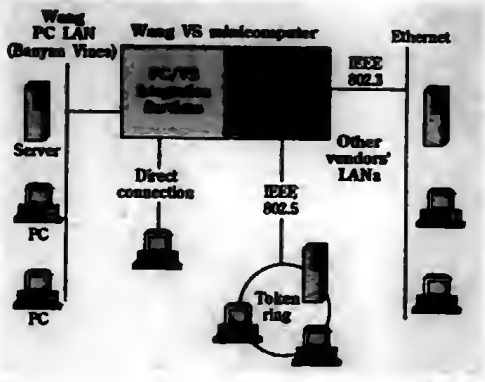
PC LAN/VS Access provides a VS connection to both Ethernet and token-ring transports running Vines, 3Com Corp.'s 3+, Novell, Inc.'s Netware and the IBM PC LAN network operating systems. PC LAN/VS Access will be priced from $2,000 to $5,500 and will reportedly be available in the third quarter.

Additionally, Wang announced PC/VS Integration Services, a set of four core software products that give users access to VS applications over Ethernet and token-ring.

All are scheduled to be available between July and the third quarter of this year.

Tying it together

Wang's latest products provide VS access and services to personal computers on its own and alternate LANs



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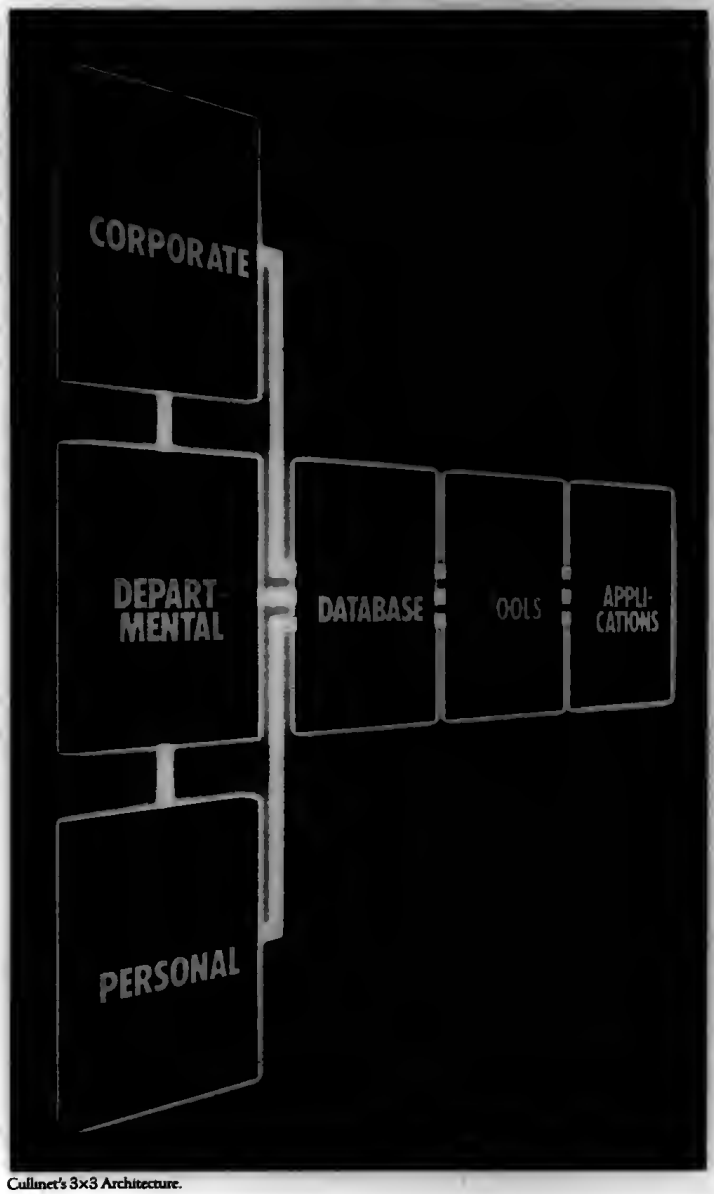

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GM fits in low-cost MAP before MAP/TOP expo

BY JEAN S. BOZMAN
CW STAFF

DETROIT — As the manufacturing industry gears up for the early-summer debut of the full-dress version of Manufacturing Automation Protocol (MAP), the standard's champion is hard at work equipping its factories with a low-cost alternative.

The full-function MAP 3.0 may be, as IBM recently called it, "the solution for plant automation communications," but General Motors Corp.'s current strategy is to implement an earlier, less elaborate — and less expensive — version.

It may seem ironic that this is happening as anticipation builds for The Enterprise Networking Event '88 International, a June exposition sponsored by the U.S. MAP/TOP (Technical Office Protocol) Users Group and the Corporation for Open Systems.

As the leader in the eight-year struggle to forge a standard for integrated communications products for the factory floor, GM might be expected to revel in this culmination of its efforts to bend automation suppliers to the will of their customers.

"We know that MAP 3.0 is around the corner," explained William Riker, senior project engineer at GM's Tech Center, "but we want to introduce carrier-band MAP to all plants, whether or not MAP 3.0 is installed there."

Take the bridge

Carrier-band MAP, technology based on MAP 2.2, is designed to bridge the gap between full MAP 3.0 implementation and no MAP at all. It will be installed at all 28 GM plants in the U.S. and Canada; many of those plants will ultimately feature some implementation of MAP 3.0.

The cost benefits will propel carrier-band to nearly every corner of GM's auto empire — even when MAP 3.0 comes along. "We feel that 95% of GM's plant equipment will use carrier-band technology," Riker predicted. "All our plants will be using carrier-band segments in some way."

Plants can easily add the carrier-band loops to a MAP 3.0 backbone network by swapping two interface boards on the carrier-band loops, Riker said. But, for now, planning and design for all MAP installations at GM begin at the Tech Center, where GM plant managers test all factory-specific MAP equipment and software.

So far, eight of GM's 28 plants have carrier-band installed. By year's end, 12 plants will be using it, Riker said.

Carrier-band is catching on because, unlike MAP 3.0, it requires no multiplexing of signals or amplification repeaters. It is a single-channel, data-only use of standard RJ11 broadband cable. But factories that use it need to consider its limitations: Carrier-band segments must be shorter than 700 meters and can support no more than 50 nodes.

Because of its significantly lower installation and maintenance costs, carrier-band allows MAP to extend to areas of a factory that require only simple instructions — such as scheduling changes for an assembly area — but do not need to receive frequent network messages. "Carrier-band is easy to install and to maintain, and it uses passive media components, so it's less complex," Riker said. The primary difference between MAP 2.1 and MAP 2.2 specifications, he said, is support for carrier-band segments. Carrier-band users will be able to migrate to full MAP 3.0 as it comes on-line at their plants, be added.

Eventually MAP 3.0

GM's Saturn plant in Tennessee will support full MAP 3.0 when factory operations begin in 1990. But even there a MAP 3.0 backbone network will be linked to multiple carrier-band segments through IEEE 802.4 carrier-band interface bridges. The bridges are programmed to recognize the tokens used on different carrier-band segments. In this way, segment-specific messages broadcast over the backbone MAP 3.0 network will reach remote carrier-band loops.

GM's engineering group has designed software specifically to support MAP 3.0's Manufacturing Message Service on carrier-band segments, Riker said. In doing this, GM is rejecting as inadequate a MAP 2.1 application layer called the Manufacturing Message Format Standard now used at the company's Pontiac, Mich., truck and bus plant. GM has no plans, however, to retrofit the Pontiac plant, which opened MAP 2.1 operations last year.

"Pontiac has all the functionality of MAP 2.1," Riker explains. "The expense in going to MAP 3.0 is not the expense of swapping the interface boards; it's the expense of rewriting all the applications."

But observers should not mistake GM's embrace of carrier-band for a rejection of MAP 3.0, Riker cautioned. "Carrier-band is not meant to replace broadband," he said. "It allows you to off-load the data traffic onto these carrier-band segments, and it gives you flexibility in designing a factory."

Setting the mold

General Motors is preparing for the full implementation of MAP in Version 3.0 by using carrierband technology available now*

INFORMATION PROVIDED BY GENERAL MOTORS CORP.

Stratus and Sybase team up

Point double-barreled guns at Tandem, DEC

BY NELL MARGOLIS
CW STAFF

BOSTON — Stratus Computer, Inc. has harnessed the relational data base capabilities of Sybase, Inc. to create a double-barreled force in the on-line transaction processor (OLTP) market that could generate headaches for Tandem today and DEC tomorrow, according to market analysts.

Announced last week, Stratus's SQL/2000 is a Sybase-based relational data base management system designed specifically to run on Stratus's XA2000 Continuous Processing Systems family of fault-tolerant multiprocessing computers.

The combination is the fruition of a two-year joint development project between the Marlboro, Mass.-based hardware manufacturer and the Berkeley, Calif., software maker. It is positioned to unite technologies that were geared for OLTP from the ground up rather than re-engineered to compete in the $17 billion OLTP arena, according to David Wu, an analyst at S. G. Warburg & Co.

"If you design your car from the bottom up to be a Porsche, it's a Porsche," Wu said. "A BMW, no matter how versatile it may be, is still a BMW; it isn't a Porsche."

The fault-tolerant XA2000 platform provides a multiprocessing architecture combined with VOS, a Stratus operating system designed to handle the rigors of transaction processing, said William E. Foster, president and founder of Stratus.

Offers architecture

Sybase brings to the party its requester-server architecture, increasingly seen as the model to beat — or join — in the OLTP-oriented data base market, according to market analysts. Under the Sybase system, user applications are segregated from data management functions, yielding gains in speed, efficiency, ease of application development and data integrity, according to Sybase Executive Vice-President Robert S. Epstein.

A significant portion of SQL/2000 is packaged directly into the VOS operating system, Foster said. So tight is the integration between the new data base product and the Stratus operating system, he claimed, that a single interface is used to query both VOS and SQL/2000 files.

Such integration, Wu said, is one of the SQL/2000 features that further suits up Stratus for commercial battle with archrival Tandem Computers, Inc., against whose Nonstop SQL product Stratus is directly positioning its new offering.

Tandem is not the only company likely to feel the competitive pressure of SQL/2000. Down the road, Foster said, "I think DEC is going to become our biggest competitor." Digital Equipment Corp. has announced its intent to enter the OLTP market in the near future.

In addition to SQL/2000, Stratus announced its commitment to integrating its OLTP offerings with a variety of workstations and personal computers through a number of interfaces scheduled to be announced during the next 18 months.

Available this month, the SQL Server component of SQL/2000 will be priced starting at $14,000. The SQL/2000 Dat workbench tool kit will start at $12,500, and the SQL/2000 VOS Server will be included in VOS Release 7.0 at no extra charge. Expected in the fourth quarter, the SQL/2000 C, PL/1 and Cobol precompilers are set to be priced from $3,000.

DEC pact for Intact?

BY STANLEY GIBSON
CW STAFF

When Digital Equipment Corp. makes a major transaction processing announcement in the near future, it will likely include a transaction processing monitor called Decintact.

The product is reportedly an adaptation of a package called Intact, designed by Advanced Systems Concepts, Inc. in Hoboken, N.J.

One major bank with a large installation of DEC VAXs that has been using Intact for five years acknowledged that it has been beta-testing the version of Intact that DEC plans to sell.

An MIS official at that bank said the DEC version will be tied more closely to the operating system that the bank has been using in order to offer increased efficiency.

The bank has not beta-tested Version 5 of DEC's VMS operating system. That version brought symmetrical multiprocessing, considered a key to efficient transaction processing, to the VAX architecture for the first time.

DEC has said for several months that a transaction processing announcement is waiting in the wings. But a DEC spokesman said that a transaction processing announcement will not be made until after May 9, when an announcement is expected.

Home shopping

Decintact was recently described on DEC's Electronic Store, an on-line electronic shopping and information facility.

However, only announced products are normally put in that videotex service, and the description of Decintact was withdrawn after DEC became aware that the product had been posted, a DEC spokesman said.

According to that description, Decintact "provides a foundation for building simple and complex transaction processing applications no one or more VAX systems under the VAX/VMS operating system" and "can support either single-threaded or multithreaded design methodologies. Multiple versions of Decintact can execute at the same time, share physical memory and be completely independent."

The program provides terminal, queue, network and file management and restart/recovery, security and menu dispatching, according to the description.

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DB2 upgrade tied to top CPUs

BY CHARLES BABCOCK
CW STAFF

IBM opened new horizons of data management with its announcement of the ESA operating system and DB2 Version 2. At the same time, IBM has cranked up the pressure on its mainframe customers to upgrade to a 3090E processor.

Despite the greater number of millions of instructions per second in the E series and 16 terabytes of virtual memory in ESA, some observers questioned whether the upgrades are necessary for all customers.

Many of IBM's largest customers said they do need the upgrades, however. Even though users have yet to write an application that taxes the 2G bytes of virtual memory offered by ESA's predecessor, MVS/XA, they said they like the 16 terabytes of virtual memory for data offered by ESA.

"It's obvious with DB2 you will be able to get much higher transaction rates. . . . We're willing to pay for performance," said Howard Fosdick, project leader for relational data base at Amoco Corp. in Chicago.

Another Midwestern DB2 user who had planned to move to ESA said it is geared toward large shops with massive amounts of data. "I bet there are a lot of unhappy smaller shops that don't want to pay the price," he said.

A price differential of $1,300 per month separates ESA base components from MVS/XA. In a similar vein, a $1,300 price differential separates DB2 Version 1.3 from Version 2.0. But the heaviest hit occurs in hardware: A 3090 Model 200 customer will not have the option of upgrading to a 3090 Model 200E; instead, he will have to go to a Model 300E at an upgrade cost of $1.6 million or a Model 400E at an upgrade cost of $3.7 million (see chart).

In addition to satisfying the large customer demand for more performance, IBM appears to have grown impatient with the continuing large base of users who have not yet made their move to a 3090E. According to Computer Intelligence, a market research firm in La Jolla, Calif., a total of 2,392 IBM 3090s have been installed in the U.S. As of Jan. 1, half of them were Model E processors.

Perhaps more significant is that an additional 3,582 older 3080 mainframes are still in service and are not candidates to run the ESA operating system.

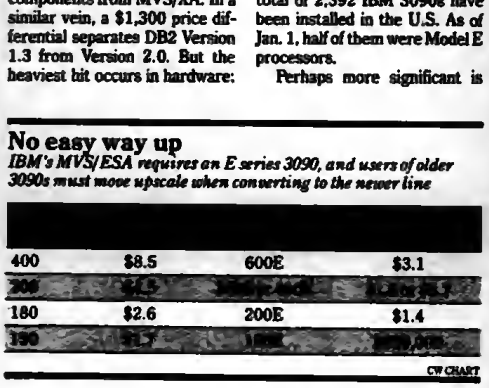
A DB2 user who wishes to take advantage of DB2 under ESA's 186 transaction/sec. capability must move to IBM's ESA operating system and its top-of-the-line processor.

IBM sent a message to its non-3090E users April 19 when it stated that future enhancements to both IMS and DB2 will be made primarily for the ESA environment, observed Tony Deakins, vice-president of Amxco Consulting in Orlando, Fla.

IBM's statement of direction indicated that those who do not migrate to ESA will eventually be stuck with an outmoded data base management system. In addition, IBM did not name MVS/SP Version 1 as an operating environment of DB2. Instead, it listed only Version 2, which is MVS/XA, and Version 3, MVS/ESA.

No easy way up

IBM's MVS/ESA requires an E series 3090, and users of older 3090s must move upscale when converting to the newer line



CW CHART

'Final cut'

"IBM has finally made the final cut. The minimum now is MVS/XA," noted Stephen Gerrard, vice-president of marketing at Applied Data Research, Inc. in Princeton, N.J.

"This is the beginning of a series of typical IBM moves where DB2 users will get the feeling they are being left behind if they don't move up to ESA," Gerrard said.

But there are likely to be many users who will drag their feet rather than take the plunge, industry observers predicted. "Right now, only 10% of DB2 users will immediately go to ESA," said Paul Hessinger, chief technical officer at Computer Task Group, Inc., a Buffalo, N.Y., consulting firm.

Novell focus on OS/2, SQL

BY PATRICIA KEEFE
CW STAFF

AUSTIN, Texas — Novell, Inc. is gearing up to add SQL data base capability to its bag of OS/2 connectivity products, according to sources close to the networking vendor.

The capability will be supplied by local subsidiary Softcraft, Inc., which is poised to announce a version of its Btrieve data base utility said to feature full ANSI-standard SQL. Novell is readying a multiple coprocessor, probably an Intel Corp. 80386-based very high-performance server, according to a Novell value-added reseller. The sources confirmed plans to introduce the server, along with the SQL data base — to be packaged with Novell's network operating system, SFT Netware Version 2.1 — at the June PC Expo in New York.

Novell is expected to ship this month Version 2.1.1, which contains the first release of OS/2-compatible Btrieve.

The offering is expected to counter SQL server capabilities offered by Microsoft Corp. under an alliance with Sybase, Inc. and the server version of the Data Base Manager feature of IBM's OS/2 Extended Edition.

Cullinet layoff

FROM PAGE 1

Strategies, Inc. acquisition, which landed Cullinet a repetitive manufacturing system that runs under the Pick Systems Pick operating system on DEC hardware, and Planning Control International, Inc., which provided Cullinet with a moderately successful performance management system.

A source close to Cullinet said employees were nervous and confused at week's end as they waited for today's news. The source claimed the company was planning to meet with employees this morning to notify those who have lost their jobs. In the afternoon, those employees who will remain will meet with supervisors to discuss the company's new direction.

Since the return of company founder John Cullinane in late March, Cullinet has been sending out signals that it would soon be trimming fat in order to return to profitability.

Shortly after Cullinane's return, top executives were reassembled into a cast that no longer included Chairman David Chapman and had starring roles for President George Tamke and John Landry, who was promoted to executive vice-president of development, which was a newly created position.

The new executive team indicated that a leaner Cullinet would now carry out the strategy of the so-called "3X3 architecture" that had been implemented by Chapman. The 3X3 strategy refers to data base, application and development tools offered across mainframes, minicomputers and microcomputers.

'More effectiveness'

In March, when Cullinane was asked if a layoff was imminent, he said, "I'd say there'd be a restructuring of certain operations that will result in more effectiveness."

Within a few weeks, President and Chief Operating Officer Tamke, in discussing which areas of the company could possibly be trimmed, said "nothing is sacred."

Landry, meanwhile, said at that time that a major announcement would soon be made that would not "alter the goals of 3X3 but what it would change is the way in which we go about attaining them."

Cullinet's far-reaching strategy for expansion into new markets is just becoming reality.

But the company has given no assurances that its earlier intentions to be profitable by the end of this fiscal year, which concluded last week, will be met.

As a result, the company has been under intense pressure lately to wash off the red ink and return to profitability.

Analysts, therefore, applauded the expected cost-cutting measures.

"I think they're going to end up a stronger company," said Robert Therrien, an analyst at Paine Webber, Inc.

One IDMS/SQL user, Gus Chicola, a data base administrator at the County of Metro Dade Office of Computer Services in Miami, said he had not been informed by Cullinet that cost-cutting measures were under way. "It makes you wonder what's going on with the company," Chicola said, "but if the company is undergoing some reevaluation, that might not be so bad."

"What has to be done now at Cullinet has to be very drastic," said Rob Anderson, a vice-president and senior technology analyst at Sutro & Co. in San Francisco. "They don't have much in the bank for a rainy day, and it's raining now."

Jerry Peters, senior vice-president of information services at the Exchange National Bank in Chicago, which is a beta-test site for the Cullinet Banking System, said he applauds any move to cut fat at Cullinet. "Layoffs, per se, are no source of concern to us," he said. "If they're cutting into the meat, then I'm going to be concerned."

Microsoft, Mac still item

BY STEPHEN JONES
CW STAFF

REDMOND, Wash. — Microsoft Corp. made it clear last week that its legal battle with Apple Computer, Inc. will not prompt it to halt Macintosh software development. Despite earlier hints by Microsoft Chairman Bill Gates that the company might cut off Macintosh development in the event of an Apple lawsuit, Microsoft announced a version of its Powerpoint desktop presentation package.

Powerpoint 2.0, the first Macintosh software from Microsoft since Apple charged last March that the developer stole the Macintosh's "look and feel," will reportedly ship later this month.

Enhanced color options

The program was designed to take advantage of the Macintosh II's color capabilities and will sell for $395 — the same price as Powerpoint 1.0.

While Microsoft was promoting Macintosh software last week, Apple showed no signs of letting up on its charges against the developer.

In a filing with the U.S. District Court in San Jose, Calif., Apple refuted Microsoft's countersuit. The countersuit claimed a right to the Macintosh interface look and feel and alleged that Apple is seeking to hurt Microsoft's business.

Industry watchers said Microsoft had little choice but to continue its development for the Macintosh, with analysts estimating that Mac sales will net Microsoft $100 million in revenue for this year.

"Microsoft can't stop development for the Mac — it's too important a platform for them to ignore," said Rick Sherlund, an analyst at Goldman, Sachs & Co. in New York.

But Microsoft claims it will upgrade all of its Macintosh products, including Word, and continue with new product development.

"We've made it clear that we're going straight ahead with the Macintosh. Everything is leading toward an upgrade," said Lewis Levin, group product manager for Microsoft's graphics business unit.

Powerpoint 2.0 requires a Macintosh Plus, Macintosh SE or Macintosh II with 1M byte of random-access memory and two 800K-byte floppy disk drives or a hard disk.

Powerpoint 1.0 users can upgrade for $40.

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Insurance firms seek paperless office

Look to scanning devices, expert systems to help increase efficiency

BY KATHY CHIN LEONG
CW STAFF

PALM SPRINGS, Calif. — More than 800 major users flocked to the IBM Insurance Executive Conference here last week, anxious to make progress toward the goal of a paperless office.

At the 12th annual meeting of domestic and international MIS directors, electronic imaging and expert systems took center stage. Compared with past years, these two technologies now seem to offer relief for the truckloads of documents plaguing the $4 billion insurance industry.

Skyrocketing medical costs, legislative reforms and increased pressure to offer new products all add to the job complexities in insurance, noted David Griffin, vice-president of underwriting at Fireman's Fund Insurance Co.

Kathy Wilson, IBM's director of insurance industry marketing, added, "There is already tremendous diversity in insurance. You have life, property, casualty and health, and if you start breaking this down, you are hard-pressed to find a similar set of solutions."

Common to insurance companies, however, is the need to decrease paperwork. Unlike other industries that focus on manufacturing goods, the product for these firms is the paper document: the insurance policy.

For that reason, users are hungry for information that would eventually lead to a paperless office. They see an immediate use for image scanning devices, which scan insurance policies and case photographs and diagrams.

"That's why I came here," said one user from Physician Mutual. "It gets really expensive to store files."

Adding to the excitement was a briefing on IBM's joint-development image scanning project with United Services Automobile Association, which will blaze a trail for others to follow. The San Antonio-based organization has installed IBM workstations in a network of optical storage devices, image scanners and IBM 370 mainframes. Users at the company will store mail on optical disks, eventually reducing the need to save original documents.

Another user offered his solution to reduce the paperwork load. Provident Life & Accident Insurance Co. in Chattanooga, Tenn., has developed a personal computer software package that enables staff secretaries to create more accurate documents through the use of boilerplate features.

Before, the staff was generating reams of wasted paperwork. Since the software package was added, the cost of generating a letter has dropped from $2 to 28 cents, said John Germann, vice-president of MIS applications at Provident.

IBM's Wilson

Leader of the pack

For many years, the insurance sector has been a leader in automation because of the need for quick turnaround.

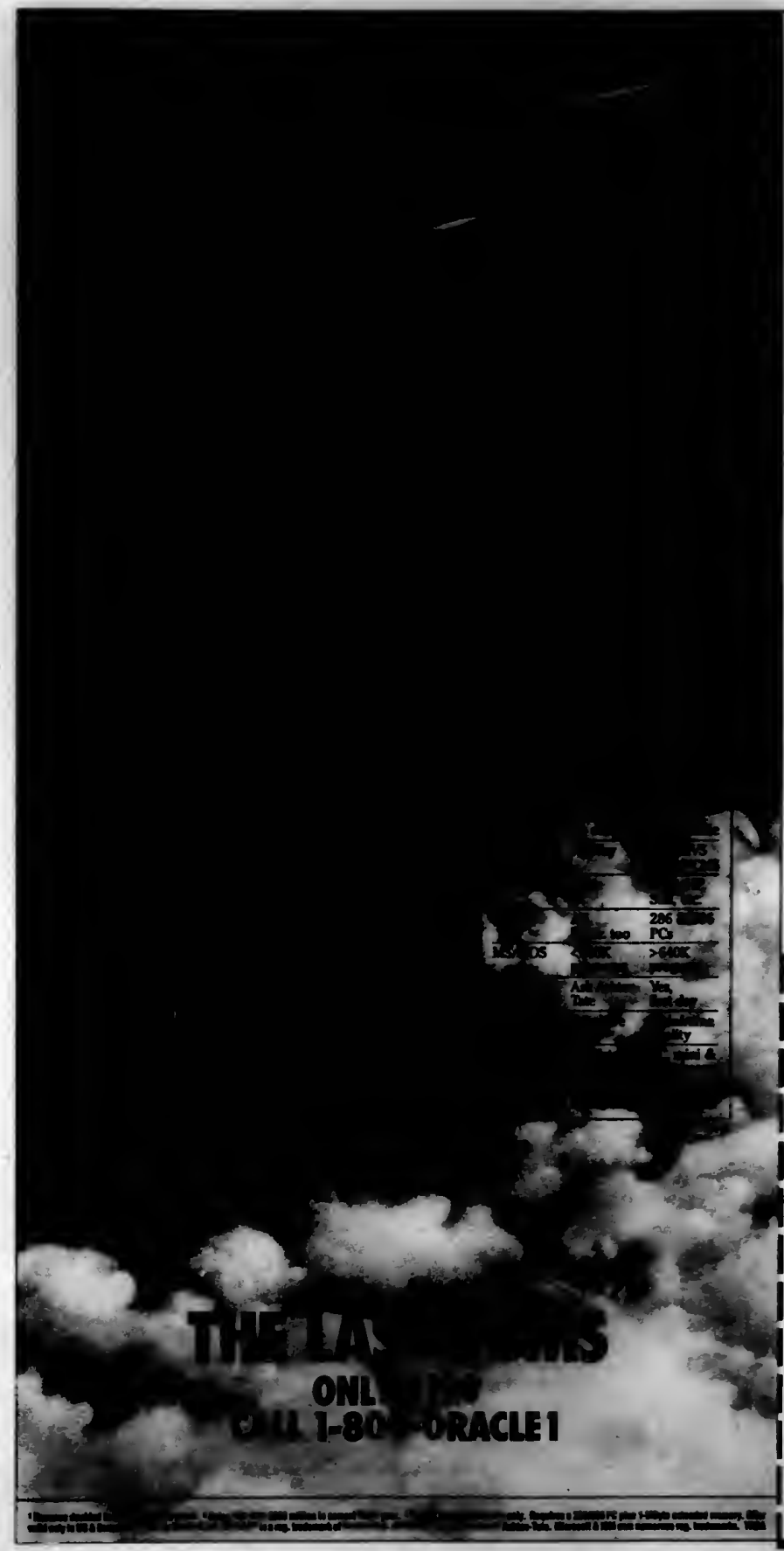
In such an industry, getting a policy to the client quickly may mean the difference between clinching or losing the contract, according to MIS directors. And if customers fail to receive reimbursement checks in a timely fashion, they may not sign up for services the following year.

This is why CNA Insurance Co. in Chicago urged MIS professionals to adopt expert system software as a means of accelerating the work of claims adjusters and examiners.

Danielle Barcilon, senior manager of life and health systems at CNA, said she expects her claims adjusters will be 30% to 40% more productive with the use of an expert system the company co-developed with Policy Management Systems Corp. in Columbia, S.C.

CNA is currently testing the expert system package, which operates on an IBM Token-Ring network. Among other things, the system is expected to alleviate the hassle for claims adjusters of poring through manuals to determine whether an accident or medical treatment is covered.

"We want to increase the productivity of our examiners and, at the same time, make our claims payment consistent," Barcilon said.



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Unisys ups R&D budget 20%

1988 spending will focus on creation of network manager

BY JEAN S. BOZMAN
CW STAFF

DETROIT — Unisys Corp. is devoting much of its 1988 research and development budget to the creation of a comprehensive network manager that would monitor the flow of voice and data throughout a customer enterprise, Chief Executive Officer W. Michael Blumenthal said last week.

Addressing the second annual meeting of the combined Burroughs Corp. and Sperry Corp. here, Blumenthal said R&D spending this year would increase by 20% over last year's $597 million budget.

"Much of our R&D spending this year will be focused on building a well-developed network manager," Blumenthal told more than 250 stockholders. He did not compare the Unisys product with other network managers, such as IBM's Netview, but it was described as having a similar function. Unisys's 1987 acquisition of Timeplex, Inc. is expected to boost overall sales of computer and networking products. "We expect that networking alone will be a $1 billion business by 1990," Blumenthal said.

Another area of R&D spending will involve co-developing a reduced instruction set computing-based computing platform for distributed applications with Sun Microsystems, Inc. "This underlies our plan to develop fast, low-cost Unix systems that will rival the power of mainframes," Blumenthal said.

He said Open Systems Architecture represents one key product area in which the $9.7 billion corporation could realize revenue potential in the 1990s. "The closed shop is becoming a rarity," Blumenthal said. "No one vendor and no one family of systems can meet all the information needs of a changing [end-user] organization."

Unisys's Blumenthal

Unisys has been positioning its Unix products as a window on mixed-vendor shops. Last year, the firm sold more than $500 million in Unix systems and expanded its base to 10,000 installed Unix-based machines.

3Com provides 3+ network with host access

BY PATRICIA KEEFE
CW STAFF

SANTA CLARA, Calif. — 3Com Corp. last week announced and began shipping 3+SNA, said to provide a gateway between users of IBM Personal Computers, Personal System/2s and compatibles on a 3Com 3+ network and host systems operating in an IBM Systems Network Architecture (SNA) environment.

This capability is critical in larger companies, where users need to manipulate data located across a local-area network as well as gain access to systems and applications residing in a mainframe, said Bruce Backa, a 3Com user and director of micro and technical services at American International Group's New Hampshire-based Domestic Brokerage Division.

The turnkey product, which includes an intelligent microprocessor-based adapter and software licensed from Rabbit Software Corp., is an extension of 3Com's 3+ network operating system.

Backa, who heads a regional 3Forum users group, currently uses Rabbit's SNA gateway and gave it high marks. Just 1½ years ago, Backa's installation, which sought terminal sessions, the ability to send and receive file transfers and access to high-level application programming interfaces, could only find one product with that level of functionality — Rabbit's gateway. Since then, IBM, Digital Communications Associates, Inc. and other vendors have introduced similar products.

3+SNA provides each PC user with concurrent access to up to eight host sessions, one Microsoft Corp. MS-DOS session and one notepad session. 3+SNA also provides a choice of file transfer capabilities and host access at speeds of up to 56K bit/sec., the vendor said.

A replacement for 3Com's 3+3270, 3+SNA offers display and other 3270 features, including emulation of IBM remote communications devices such as 3270 control units, displays and printers.

Pricing for 3+SNA is $4,995 per gateway with 32 concurrent sessions. An application programming interface option costs $395. Both are available now.

Two other add-on features are slated to be available late this summer.

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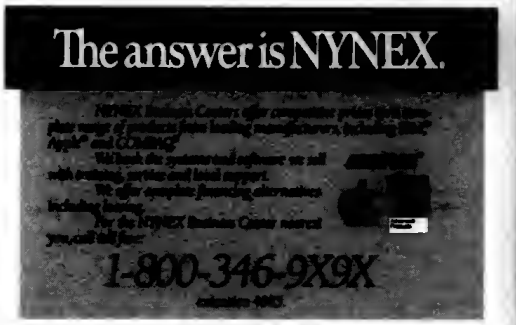

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Prime solid, but high end dips

NATICK, Mass. — Prime Computer, Inc. reported solid first-quarter earnings and revenue gains last week but said it experienced a slowdown in U.S. sales of high-end systems.

Prime's financial report reflected the downturn in domestic minicomputer demand felt by competitors Digital Equipment Corp. and Wang Laboratories, Inc. "Our U.S. order rate remained sluggish as we experienced delays in closing high-end system sales," Prime President Joe M. Henson said in a statement.

But overall, Prime earned analysts' praise for the efficient consolidation of Computervision Corp. Prime took a $4.5 million, or 9 cents per share, charge from restructuring, but that was more than offset by a $6 million onetime gain from accounting changes.

Profits, including a onetime net gain of $1.5 million, rose 22% from year-earlier results to $14.5 million. Revenue, including Computervision results for the first time, was $363.7 million, compared with $221.7 million in first-quarter 1987.

"Revenues were a little light, but they did more on the expense side than I estimated, so the bottom line looked good," said First Boston Corp. minicomputer analyst Susie Peterson.

CLINTON WILDER

Lautenberg tries for second term

JERSEY CITY, N.J. — Sen. Frank Lautenberg (D-N.J.), cofounder of Automatic Data Processing, Inc., last week announced his bid for election to a second term.

Lautenberg is expected to easily outdistance two relatively unknown opponents in the Democratic party primary June 7. He will face stiff competition from expected Republican nominee Pete Dawkins, a retired U.S. Army general who recently moved to New Jersey.

In a speech kicking off his campaign, the former ADAPSO chairman enumerated his accomplishments in his first term, including contributions made to the information technology industry.

The senator spoke of his legislative actions to protect American-made technology from infringement by foreign concerns and a bill, currently awaiting the president's signature, to provide computer training in schools.

"Protecting our ideas, our inventions and our patents means protecting our jobs and our workers, our scientists and their families — everyone whose future is tied to American ingenuity," the senator said.

"The law I wrote to protect those inventions has helped, but I want to do more," he said.

ALAN ALPER

Gene Amdahl

CONTINUED FROM PAGE 1

The machine will be based on very large-scale integration technology and incorporate high-density CMOS chips. "What we're trying to do here is use a technology that is extremely inexpensive compared with what IBM uses," said Bob Nuckolls, a former Trilogy engineer and now vice-president of systems development at Andor.

"We're going for the low end [of the mainframe market] because that's where we can build a machine that has the highest margins. IBM has its highest margin on that machine, too," Nuckolls said. "It's the most lucrative part of the market."

Safe bet

This argument has lured a first round of investors, despite Amdahl's economic disaster with Trilogy in the early 1980s. That company squandered nearly $100 million trying to develop wafer-scale integrated circuits and mainframes designed to outpower IBM. After scrapping those projects, it was absorbed by San Jose, Calif.-based Ehrsi, Ltd. in 1987.

Amdahl said he raised $2 million in the first 18 months for Andor, which was formed last June. The money came from an India-based holding company, a U.S.-based holding company and "all sorts of businesses," he said.

Amdahl said he has yet to begin tempting investors into a second round of funding. Referring to potential venture capitalists, Amdahl would only say, "I haven't heard any disinterest from anybody."

The lack of early commitment may not be a major hurdle, according to Jay P. Stevens, an analyst at Dean Witter Reynolds, Inc. in New York. "He's not looking for all that much money," he said. "I think he's got a chance."

Amdahl said Andor's relationship with IBM is cordial, despite the fact that he is looking for an inroad into IBM's market share. He said he sticks to plug-compatible machines, "because if you want to mine gold, you mine the mother lode."

Amdahl is shying away from direct competition with Amdahl Corp. by supporting a computer below the power levels of that company's mainframe line.

Andor will stay out of trouble with IBM by working out a cross-licensing deal, Amdahl said. "It's easier to pay whatever royalties are required, even if you don't infringe on them.

"We will be a mosquito on the side of IBM. But we hope to be one that's satiated with blood."

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5. **Indexing for Performance**
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6. **Using the SQL Data Manipulation Language***
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7. **Using QMF for Application Development**
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9. **Relational Integrity**
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      - Table, Index, & Plan Considerations for Performance
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      - Space Management
      - Determining Function & Object Privileges
      - Documentation Using the Catalog Tables

Seminar Development and Enhancements

The DB2 DESIGN & DEVELOPMENT FOR PERFORMANCE seminar has been developed, refined, and revised for each release of DB2 and updated based upon the input of over 1,000 seminar attendees over the past three years by Gabrielle. Version 2 announcement has been added to the seminar.

The book "DB2 DESIGN & DEVELOPMENT GUIDE" by Gabrielle Wiorkowski and David Kull has been written based upon the seminar and is available from Addison Wesley by calling 1-800-447-2226.

Inhouse Seminar Offerings

$1495 is the cost of the seminar per day with up to 15 professionals at your company site customized to meet your requirements. (Sections with workshops available are indicated by an "*" in the outline). Each professional over 15 is charged at $100 per day (compare with typical charges of $200 to $300 per day.)

Licensing of the seminar material for inhouse training programs is available for $15,000. Excellent choice if you plan to train more then 30 professionals.

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EDITORIAL

Age of integration

NEWS FLASH: The electronic publishing industry declared its commitment last month to design products targeted at improving information management and integrating them with existing corporate information systems.

Surprised? Probably not.

As every information systems executive knows, the long-term success of new technologies relies mainly on the ability to coexist with and improve upon the corporate information infrastructure. Although revolutionary technologies can produce quick fortunes for entrepreneurs, Fortune 500-type success comes only to those vendors able to go beyond a focus on individual users and concentrate on serving corporate structures. That's why personal computer vendors are increasingly allying themselves with networking technologies, LISP workstations are facing a stagnant market and optical products vendors still await the breakthrough that will bring customer commitment.

As indicated in our Spotlight report on electronic publishings systems [CW, April 25] and observations at the recent Corporate Electronic Publishing Systems show in Chicago, the electronic publishing industry appears to be waking up to those real-world realities. As David Henry Goodstein, CEPS chairman and president of Interconsult, Inc., put it so well, the industry wants "to get beyond the shimmering goal of WYSIWYG" — that tongue-tripping acronym conveying that What You See on your monitor Is What You Get on your printout — "and decide that electronic publishing is all about information management."

Information systems executives, therefore, have reason to rejoice. Rather than focusing solely on desktop presentation products, successful purveyors of publishing systems will focus mostly on what American businesses need and want. In business today, rapid change and cutthroat competition demands that more and more individual employees and work groups be tied into cohesive networks of compatible computer products.

The publishing industry has come to this battleground along two flanks: the PC-based standalone solution on the one hand and the minicomputer-based, proprietary multiuser solution on the other. Presumably, they will meet somewhere in the middle, using standard hardware platforms and standardized connectivity protocols to allow printing to join the information management mainstream.

So the marketing focus — and none too soon — now moves away from selling individual users on the latest wonders of a new font cartridge and toward the crucial issues of networking, distributed data base management systems and, somewhat ironically, the pros and cons of tying into centralized corporate data bases, the mainstay of the much-maligned mainframe.

LETTERS TO THE EDITOR

Recruiters defend their profession

Anthony Reed's article, "When the headhunter calls" [CW, April 4] began with some dime-store advice and ended with a stab in the back to headhunters.

Reed is not a recruiter. Nor was there any mention that he had any special qualifications for his "expert advice." If Reed had an ax to grind, why allow him to use *Computerworld* to spread his innuendos about "unscrupulous" headhunters? There are numerous professional search firms that could offer more appropriate and experienced advice.

Has the headhunter become the new whipping boy? I have no guilt in helping qualified data processing professionals better their careers. Do I get paid a commission for placements? You bet I do. I earn those fees and do my job with care and conscience. As the same issue pointed out in a survey of 370 systems organizations, search firms were found to have the highest degree of success for recruiting staff.

John Malinoski
Data Processing Recruitment
Gilbert Lane Personnel Service
Hartford, Conn.

Anthony Reed's article contained some practical advice about working with recruiters.

The author also revealed a number of unscrupulous tactics that have been used by unethical recruiters and by equally unethical employers.

The problem with his article was that in trying to differentiate between the good and the bad, examples of recruiter behavior were given that could be confusingly attributed to any recruiter. The use of generalized illustrations painted an unfair picture.

Professional recruiters are competent people who act with honesty and integrity and are dedicated to providing a valuable service to client companies and candidates. They are committed to establishing long-term business relationships, and this can only occur by adherence to sound ethics. Unfortunately, there are some less-than-desirable recruiters, just as there are ill-mannered and untrustworthy members in all occupations. It is, however, unprofessional to negatively stereotype every individual within an occupational group.

Marc L. Blessing
Director
Compusearch
Cleveland

Anthony Reed immediately set a prejudicial tone in his article by calling executive search consultants "headhunters." Yes, the slang name has been used, but it is no more accurate than calling Reed a "hacker."

Good executive search consultants are in their profession for the long run. Many are not paid commission, as Reed stated, but receive salaries and year-end bonuses. Whether or not they place a specific candidate, therefore, is not nearly as important as making the correct match.

The most cogent point Reed made was that there must be mutual trust between the candidate and search consultant. Yet Reed also advised the systems professional to do everything but trust the search profession.

If Reed wanted his audience to trust his arguments, he should have proved his points with tangible evidence. Instead, his article read like one that comes from someone who may have a personal gripe with one person but no real substantial proof to make any of the unfair and erroneous allegations that be made.

Sheryl Kay
Director of Technologies
Criterion Executive
Search, Inc.
Tampa, Fla.

Anthony Reed's article advising what to do when the headhunter calls made a few good suggestions but spent more time promoting an adversarial relationship between systems professionals and recruiters.

Does it make sense to be abrupt to someone who is calling to offer you an opportunity to earn several thousand dollars a year more and be trained in and work with new technology just because they initiated the telephone call?

Does it make sense to talk about the few circumstances where someone from your own shop will pretend to be a recruiter in order to trap an employee without saying that if management is crazy enough to do that you should consider changing jobs?

Recruiters help staff a number of programming, systems and management positions every day. Perpetuating mistrust, as this article did, is a disservice.

Jeff Altman
Jeff Altman & Co.
New York

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.

Getting in on standards

Users will help shift the focus to testing for product compliance

JOHN L. BERG

Don't take your eyes off computer standards. They face changes as dramatic as those happening in other areas of the information industry. The changes will affect corporate expenditures amounting to billions annually and will make or break many new (and old) products.

Yet judging from the discussions at the IEEE's biennial Computer Standards Conference in Washington, D.C., those closest to making standards may be the least aware of the changes or their importance.

At one time, the process that led to formal national and international standards involved gathering the interested parties that argued, politicked and compromised until they produced a document. Then they published the standard so the world could implement it. Other than periodic reviews, this publication ended standardization.

No more. Open Systems Interconnect now leads the new wave with its requirement for certification. Simply stated, specific products must prove they comply with the standard specifications.

The demand for certification, led by major users, is so beneficial to smaller users and niche vendors that their combined support has resulted in the mushrooming of third-party testing groups around the world. This demand will shift attention away from making the specification to testing a product's compliance.

Howard Yudkin, chief executive officer of the new Software Productivity Consortium and keynote speaker at the recent Compstan 88, states that future software productivity will depend on widespread availability of software modules.

These modules, as listed in parts catalogs, will permit off-the-shelf software pieces to be readily assembled into systems. Yudkin adds that certification of each module's interface was essential to the acceptance and use of this approach. Yet he also noted that it was irrelevant whether the specification was produced by formal standards groups.

I see two possible futures for standardization. In one, standard specifications will come from many — now unlikely — sources. In the other, the testing and certification of a standard will become the important, operative step.

Bull by the horns

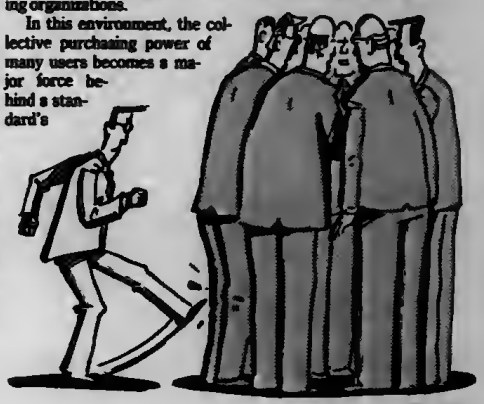
The first scenario is already upon us in some ways: Users dissatisfied with the slow progress of today's standards are working around the process. The IEEE produced Posix as a publicly owned equivalent of the proprietary Unix operating system. It is also trying to standardize the IBM Personal Computer bus. We will see other groups taking similar action.

ANSI's inflexible thinking about the current standardization process may be the major problem for these groups to overcome. Foremost among user criticism of standardization today is the interminable duration of the process.

In the second scenario, certification will become the working edge of standardization. Consider the intermediate steps:

- Validation asserts that a product has been found to comply with all or specific subsets of the standard. This service is now provided for certain compilers in the U.S., Europe and Japan.
- Certification puts the tester's reputation behind the testing and reflects some degree of liability for the certification claims.
- User procurements habitually specify certified products. Like the Underwriters Laboratory "UL" tag, a certification mark will enhance a product's value and obliterate competitive vapor standards.
- The insurance industry offers new policies to share certification liability and guides certifying organizations.

In this environment, the collective purchasing power of many users becomes a major force behind a standard's acceptance and enforcement. Testing becomes the concrete embodiment of the standard specification, and its reproducible results can be used at any time to demonstrate compliance.



PETER SUPER

IBM and others have long considered standards a business, not a technical, decision. Compstan 88 speakers from DEC and Wang note the benefits of supporting global standards in their companies and to their users.

It is high time that users also see standards as a critical business decision. Vendors and users should grasp the current opportunities to manage, not simply accept, the standards that could directly determine their present and future systems costs.

Berg consults in strategic, technological and competitive edge planning from Long Lake, Minn. He is editor in chief of *Computer Standards & Interfaces* and serves on the planning committee of the 1989 International Conference on Standardization.

Are top execs drowning in data? SIC it to 'em

Strategic centers transform information into a lifeline to reach corporate objectives

JOHN KIRKLEY

MIS managers take heed: Your company's senior executives are drowning in a sea of data.

And where are you? Are you ready to throw them a life preserver? Or are you down in the bowels of the ship shoveling coal into an IBM 3090, deaf to their frantic cries?

One of the people examining the strategic use of information is Michael Gauthier, a principal at management consultant firm Temple, Barker & Sloane, Inc. in Lexington, Mass.

"MIS is almost never involved," Gauthier says, when asked about the collection and presentation of strategic competitive information.

MIS managers seem to be comfortable dealing with quantitative information, but they shy away from the more ambiguous world of qualitative data — the world of images, abstractions, opinions, ideas, suppositions and conjecture.

The trouble is that, once again, technology has presented MIS with new challenges. Advances in optical media, communications, the speed and power of personal computers, as well as the rapid spread of end-user literacy, have unleashed a wave of creative information consumerism among the user community.

The power and bandwidth is there to handle this flood of unstructured data. But somebody has to pull it all together into digestible form.

What these decision makers need, Gauthier says, are systems that integrate external qualitative data and internal data processing information. How to go about this integration leads Temple Barker to contribute yet another acronym to the industry's lexicon: the SIC, or strategic information center.

These centers coordinate research efforts with corporate objectives. As specialized units, they perform specific in-depth research and provide analytic services that prepare the data they gather for their top-management clients. Often, the SIC works in conjunction with existing corporate library services, which provide data from standard reference sources.

Not just a pipe dream

Gauthier says several SICs already exist. E. F. Hutton has put together a corporate war room, where executives gather comprehensive information on their clients, such as demographics, product lines and management changes. Just one of the many uses of this data is to alert Hutton's sales force to opportunities to sell new products to their existing customer base.

The war room also keeps tabs on Hutton's competitors by tracking Securities and Exchange Commission filings and using information purchased from outside research services to scan the top corporations on their target account lists.

"Technology has made it possible to collect new categories of information, particularly nontextual, qualitative information," Gauthier says. For example, using optical technology, data bases of images can now be gathered, a capability already being exploited by advertising agencies.

Suppose your agency needed a picture of 10 typical yuppies for an ad layout. It's there in the data base: Ten yuppies at the push of a button.

Another service some SICs provide is to coordinate the purchase of research materials. You know what I'm talking about: those bulging three-ring binders (and the plastic-covered update pages that nobody ever gets around to inserting), the newsletters, the bulletins, the handsomely bound reports.

These services are not cheap, and although the information provided may be very useful, it is often not used properly.

Gauthier cites the example of one client who spent $7 million a year on research materials. In a fit of cost-consciousness, management checked through the company and failed to uncover the massive investment — most of the materials had disappeared into some corporate black hole.

Such research contains a wealth of data that a SIC can transform into concise, fertile information — information that a senior executive can use to make critical decisions.

However, before cobbling together a SIC for your company, Gauthier recommends you find out first just how smart your company wants to be. How much data does top management want and need about its competition or its marketplace? It could be that your managers are quite happy with the present corporate IQ and will cast a cold eye on any attempt by MIS to raise it.

But if the need is there, the opportunity exists for MIS directors to add a new dimension to their traditional role of processing quantitative information for the corporation. It doesn't matter what it is called — strategic information center, war room, competitive analysis center.

Like new glasses

The point is that the SIC concept focuses yours and your management's attention on gathering, analyzing and presenting key strategic information in ways that MIS has never been involved with before.

Within your own organization, there probably exist rich pockets of information just waiting to be coordinated by an MIS department that views its function as something much more broad than being an adjunct to the accounting department.

So, when you next hear your top management's faint cries for help as another sea of data washes over them, rush to the rail and heave that life preserver. In the last analysis, the life you save may be your own.

Kirkley is a computer industry writer, editor and consultant based in Warwick, N.Y.

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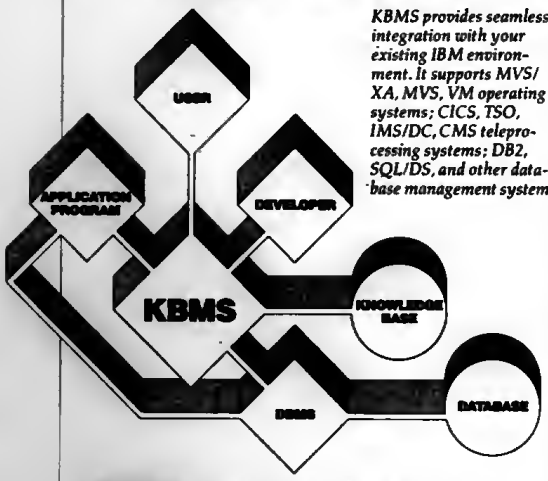

KBMS provides seamless integration with your existing IBM environment. It supports MVS/XA, MVS, VM operating systems; CICS, TSO, IMS/DC, CMS teleprocessing systems; DB2, SQL/DS, and other database management systems.

A major computer company is saving over $25 million a year on product ordering and configuration, thanks to expert systems they developed in-house.

A leading financial services company has substantially reduced bad credit losses with a computerized system they developed based on artificial intelligence.

These are true stories. Yet expert systems still have not taken a serious place in the business world.

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SOFT TALK

Jean S. Bozman

Learning to live with DB2

Around BUG, the BMC Corp. users group that met in Houston two weeks ago, an IBM shop earned the title "robust" when it had successfully applied IBM's DB2 relational DBMS to production applications.

"Out of every 10 users, one is a robust shop," says Jack Olson, a manager of DB2 product development at BMC, which writes DB2 system software utilities in Austin, Texas. "It takes about 18 months to become a truly robust shop. The learning curves are very steep, and there's no way to buy the experience. You have to develop it in-house."

Olson should know. A former IBMer, he has been working with DB2 customers ever since IBM shipped DB2 Release 1.0 in 1985. So far, there have been relatively few "robust" shops nationwide, BMC managers say. Among the few are Amoco in Chicago, Flying Tigers air freight in Los Angeles and Texaco — which has more than 400 production DB2 tables. But most of the DB2 shops Olson sees are still learning — and roughly half of those have less

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Harrison leaves sturdy Workbench

BY CHARLES BABCOCK
CW STAFF

FALLS CHURCH, Va. — Richard G. Harrison, organizer of the federal Programmers Workbench, has stepped down, and Rand Information Systems, Inc., which supplies the underlying platform for tying together the workbench tools, has filed for bankruptcy.

Some say it is fitting testimony to Harrison's organizing ability that the two events will have little impact on the workbench. Thirty-six federal agencies purchased the workbench or components of it in its first year of existence at an average price of $150,000, and another 11 have purchased it so far this year.

Recent buyers include the Defense Logistics Agency, the Office of Personnel Management, the Air Force Logistics

GSA's Harrison

Command and the Social Security Administration. An estimated 5,500 programmers in the federal government are now workbench users.

When he became director of the General Services Administration's Federal Software Management Support Center four years ago, Harrison seized on a tentative, pilot workbench in use in part of the center and filled it out. Formerly in the tools business himself, he talked to private vendors and urged them to submit bids on their products for a workbench tied together by a common menu and user interface.

It was a move that someone speaking for the federal government could execute, but one that the vendors were unlikely to collaborate to make on their own.

"It was hard to dampen the competitive spirit. We would have meetings in which no one would want to say anything. They didn't want to talk about their products in the same room with their competitors," Harrison recalled.

The 10 products on the workbench represent a Cobol mainte-

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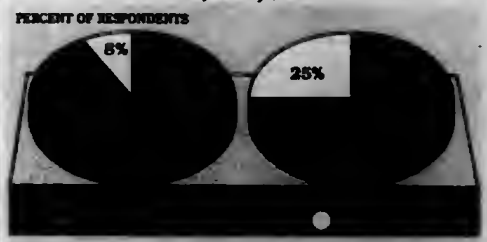
Data View

Opening packages

Japanese MIS managers, who used to turn up their noses at everything but in-house development, plan to spend more on packaged software by 1991



INFORMATION PROVIDED BY INTERNATIONAL DATA CORP.
CW CHART

Expert system offers advice on MVS events

PRINCETON, N.J. — A continuously running system that is now available on a personal computer is said to offer human expert-style assistance in analyzing MVS and recommending appropriate responses to problems.

Mindover MVS from Applied Data Research, Inc. is not a replacement for in-house MVS expertise, but it can assist MVS

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MSA refines product lines

Users applaud sharper manufacturing focus

BY ROSEMARY HAMILTON
CW STAFF

ATLANTA — Management Science America, Inc. (MSA) recently presented its manufacturing subsidiary with a clear agenda for the first time in two years.

While the picture has a sharper focus, it will also take years before the plans become products available in the marketplace. Nonetheless, MSA won approval last week from users, who say what counts is that MSA is on the right track.

"I sense they are taking the bull by the horns in the manufacturing area," said Matt Perri, director of MIS at BASF Corp. "I've been watching what they're doing, and it doesn't make me nervous."

Representing 40% of revenue, manufacturing software is a critical piece of MSA's business. During the past two years, the company has reshaped and rede-

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Inside

Computer Associates graphics translator links varied systems

GARDEN CITY, N.Y. — Computer Associates International, Inc. recently introduced a graphics software tool that it said will link mainframe, mid-range and microcomputer graphics and software devices.

CA-Graphics Connection is another step taken by Computer Associates to position graphics as an integral part of everyday business, the company said.

The new product serves as a graphics translator and is said to allow users to move graphics data from a variety of graphics-producing applications to a number of graphics output devices, electronic publishing systems and graphics editors.

Supports common formats

The product supports four common formats: Hewlett-Packard Co.'s HP-GL, IBM's ADMGDF, ANSI-standard CGM and Computer Associates' own Disspop. The company said it covers nearly all graphics-producing applications by supporting these formats.

With this support, CA-Graphics Connection can support such mainframe and minicomputer products as CA-Tellagraf, CA-Disspla, SAS Institute, Inc.'s SAS/Graph, SPSS, Inc.'s SPSS Graphics and Pansophic Systems, Inc.'s D-Pict.

It also allows access to such microcomputer applications as Lotus Development Corp.'s Freelance Plus, Ashton-Tate Corp.'s Draw Applause and Computer Associates' Superimage and Superchart.

CA-Graphics Connection will begin shipping this month. Initial versions were designed for the IBM MVS and VM operating environments as well as for the Digital Equipment Corp. VMS platform. Prices for the DEC platform range from $6,000 to $21,000. The IBM versions range from $11,000 to $26,000.

Adpac analyzer gives blueprint of source code

SAN FRANCISCO — A $60,000 source code analyzer and documenter is now available for PL/I programs from Adpac Corp.

Adpac has adapted its PM/SS system for Cobol source code analysis to work with the IBM-originated PL/I language. The system analyzes the structure and content of a PL/I system and documents the relationships among its components, such as data elements, data sets, copy or include books and source programs, company spokesmen said.

The PL/I analyzer, also used to perform data name rationalization, automates the cleanup of redundant data used in the population of data dictionaries. It also enforces control over naming and other programming standards.

Tells you what to do

The product tells the user "how a system is structured, what design principles were employed and the availability of documentation," said Al Vickers, sales manager.

PM/SS also interfaces to Adpac's line of computer-aided software engineering tools, DFDP and Design. It was designed to run under either MVS/SP or MVS/XA.

Adpac is a 25-year-old company that provides tools for MVS. Company spokesmen said PM/SS is in use at 120 businesses.

Harrison

CONTINUED FROM PAGE 23

nance programmer's tool kit. They include Data-Xpert from XA Systems Corp., Via/Insight from Viasoft, Inc. and Cobol restructurer Retrofit from Peat, Marwick, Main & Co.

Changed some minds

The Programmers Workbench "is a product that has changed the way we think about the maintenance programmer's task," said Richard K. Ball, director of the Software Management Institute.

"Richard [Harrison] is a man of immense intelligence, imagination and will to get things done," said Nicholas Zvegintov, publisher of *Software Maintenance News*. "The mere availability and promotion of the Programmers Workbench has changed the way the software profession looks at maintenance tools," Zvegintov wrote in the latest issue of his newsletter. Harrison was named Newsmaker of the Year at the Software Maintenance Association's conference in Toronto last year.

Harrison resigned Friday to establish a printing business with his wife in the hotel-studded suburb of Arlington, Va. After incessantly promoting the workbench, Harrison is leaving it in the hands of Diane Herdt, the center's workbench manager.

Rand Information Systems will continue to make the base configuration available as Chapter 11 reorganization begins. Center officials said the platform is an ongoing asset of the company, and Rand officials have indicated they expect to return to normal operation after creditors are satisfied.

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Ontologic clears way for VAX-based Vbase this month

BY CHARLES BABCOCK
CW STAFF

An object-oriented data base management system, Vbase, is now available from Ontologic, Inc., and the Gemstone object-oriented system from Servio Logic Corp. is now available on Sun Microsystems, Inc. workstations.

Object-oriented systems are capable of handling data in more complex forms than other DBMSs and have been used heavily in computer-assisted design functions in which text, designs and images are frequently stored in the same file.

Vbase runs on Sun workstations and is scheduled to be available for the Digital Equipment Corp. VAX this month at prices starting at $14,900.

In Vbase, objects have three elements. "Properties" model such attributes as the size, color or cost of an object; "relationships" link objects together; and "operations" model the activity of the object — what it does. These elements can be combined in a Vbase file, according to Robert P. Berkowitz, president of Ontologic.

Vbase is written in C and supports C and SQL in applications. It includes type-definition language, which serves as an object specification compiler, and extensions to ANSI C in a C language compiler that provides access to data base objects.

The product also includes development tools debugging at the model level.

The 45-employee company, based in Billerica, Mass., said it plans to provide a version for Apollo Computer, Inc. workstations in the third quarter.

Gemstone valuable to Sun

Servio Logic in Beaverton, Ore., introduced Gemstone for the Digital Equipment Corp. VAX in January and is now offering it for Sun-3 and Sun-4 workstations. It is priced between $19,950 and $85,270.

Gemstone uses a client/server approach. The data base server operates on a VAX or a Sun workstation and includes Opal, an object-oriented programming language for data definition and manipulation.

Clients may reside on either the host VAX or another VAX, the host Sun or a Sun-3 workstation, an IBM Personal Computer or a Tektronix, Inc. workstation. The company plans to add the Apple Computer, Inc. Macintosh to the list this year, said Michael Connell, general manager of data management systems.

The client software includes the Opal Programming Environment, which features windows, high-resolution bit-mapped graphics and a mouse. Applications may be written in C or Smalltalk and can run on either the workstation or the host, Connell said.

Gemstone stores data structure, behavior and value in the data base rather than in the application, making it a general-purpose system for dealing with large volumes of complex data, he said.

The Gemstone system also provides multiuser access to data with concurrency control, access through value-keyed indexes, authorization and security, clustering for efficient retrieval and recovery features, according to the vendor.

Objects are members of different classes that determine what procedures may be used for performing operations on them.

DB2 tool gets upgrade

Now application builder can order from catalog

BY CHARLES BABCOCK
CW STAFF

FORT LEE, N.J. — On-Line Software International, Inc. is slated to announce today that it has added the ability to populate the dictionary of its DB2 application building tool, Casepac, with data from the DB2 catalog.

The Population Facility added to Casepac in Release 2.0 eliminates the need to re-enter information from the DB2 catalog into the product dictionary, as earlier releases had required.

The Population Facility, which previously read IBM IMS file structures, can now also read Cobol programs and copy libraries. This feature allows Casepac to locate data items used in the application.

Compare and save

The Casepac dictionary can also compare its contents with those of the DB2 catalog, allowing it to capture any changes made to the data base from outside the dictionary. The comparison facility also lets Casepac detect discrepancies and alert those involved in the development process to possible infringements on integrity, according to Jeffrey Weinberger, Casepac product marketing manager.

Casepac also includes an Impact Analysis facility to identify all elements of an application that will be affected by a proposed change and the effort required to implement those changes across the board, Weinberger said.

The Impact Analysis component documents the results of changes to a system. "Where used" reports identify programs that have been affected by a modification. "How used" reports distinguish between inquiry and update processes, according to Weinberger.

The new release also supports key-based modeling. Primary and secondary keys are defined to aid data base design. Key-based modeling helps users ensure referential integrity of the data model, Weinberger said.

Casepac 2.0, a joint venture of On-Line Software and Tata Consultancy Services in Bombay, India, is available immediately for $200,000 under MVS/XA.

MSA

FROM PAGE 23

fined the software. First, MSA purchased two manufacturing software companies, Comserv and RTS Ltd., to fortify its manufacturing applications lineup.

Then it spun off the manufacturing business as a separate subsidiary, Advanced Manufacturing, Inc. Recently, however, the company pulled the subsidiary back into the corporate fold. While it will remain a subsidiary, it will no longer have its own separate sales or research and development effort. Company executives said this is an attempt to make the operation more efficient by cutting additional layers of management.

The acquisitions had left MSA with a collection of applications, including two competing systems for IBM mainframes, an application suite for Hewlett-Packard Co. minicomputers and applications for the IBM System/36 and 38 platforms.

In an interview at the Interact MSA users group meeting recently, Michael Hunt, president of Advanced Manufacturing, said development work is under way to merge the two mainframe offerings: Amaps-M, the original MSA software; and Amaps-Q, the Comserv product. "We recognize we can't keep up with the support of two," Hunt said.

Hunt said it will take four or five years to merge the two Amaps in a phased process of releasing software updates as common modules that will run in both the Amaps-M and Amaps-Q environments.

Meanwhile, a second development effort is under way to integrate the RTS software, which includes both manufacturing and financial applications, with the mainframe applications. This would eventually allow a user to run remote System/36 or 38 applications that tie into the mainframe manufacturing system.

Like the plans to merge the mainframe packages, this effort has a way to go before it becomes reality. Scheduled deliveries begin later this year, according to Maurice Spillane, an MSA vice-president. MSA plans to integrate the two environments in phases, adding modules to the integrated environment in the next two years, he added.

Plans for manufacturing software that runs on the HP Series 3000 platform are behind schedule. The company had announced last year that a version of this software would be available for the new HP Spectrum series by the end of 1987. MSA has not yet shipped this version, Hunt said, because HP was late in shipping MSA the Spectrum hardware.

When MSA purchased Comserv, "there was a lot of confusion. I think they ate a bigger fish than they thought they did," said Thomas Sullivan, manager of logistic systems at Miles, Inc. in Elkhart, Ind. "Now it seems pretty steady."

Ramis 4GL DBMS retains IBM focus

BY ALAN ALPER
CW STAFF

FORT LEE, N.J. — On-Line Software International, Inc. recently brought out a new release of its Ramis fourth-generation language and data base management system said to support IBM's MVS/XA operating system and offer read/write interfaces to IBM's DB2 and SQL/DS.

In its first release since acquiring Ramis 18 months ago, On-Line is seeking to improve the system's performance and provide ease-of-use features to increase its competitiveness, according to Jonathan Smith, product marketing manager.

Rather than expand the number of platforms Ramis runs on, as its primary competitor Information Builders, Inc. has done with Focus, On-Line has concentrated on the IBM mainframe environment and connectivity to Microsoft Corp. MS-DOS-based microcomputers, Smith noted.

Staunch support

"We believe a lot of users will remain on the mainframe, and we're not going to leave them," he asserted.

Users queried last week said the major improvement in Ramis Release 7.1 is that all of its functionality is now bundled in a single package, in contrast to the separate components offered in previous versions.

"There's more continuity with this release than ever before," noted Paul Tinnirello, assistant vice-president of programming at A. M. Best Co., an Oldwick, N.J., provider of insurance industry information.

There are approximately 1,300 Ramis installations, Smith said, adding that the number has increased by about 10% since the product's acquisition from Martin Marietta Data Systems. He noted that the company has sold in excess of 3,500 Ramis personal computer workstation licenses, the system's micro implementation, in its first year on the market.

High-powered answer

By supporting MVS/XA, Ramis Release 7.1 provides improved systems resource utilization, Smith said. Significant portions of Ramis applications will now run above the 16M-byte line in the MVS/XA environment, easing resource contention problems that result from Ramis use during the production cycle, he said.

Additionally, a new CICS interface is said to enable multiple copies of Ramis to run in multiple CICS address spaces as started tasks. This should relieve overhead currently imposed on CICS users, Smith noted.

The new release is also said to enable users to automatically extract or maintain DB2 or SQL/DS tables from the appropriate catalog without using SQL commands via Ramis's integrated data dictionary.

Users enter the full creator, table and column name in the interface main menu and a corresponding Ramis file description is generated. Once extracted, the user is able to access the file through Ramis's retrieval and reporting facilities. "This extends ease of use, since data from other data bases can be easily extracted without having to spend time and money on support costs," Smith emphasized.

Ramis's menu-based architecture provides access to all reporting, screen design, data maintenance, dictionary and applications development tools. A new facility, called Menu Expert, enables users to build applications without using Ramis syntax. The user is guided through the development process by a series of context-sensitive menus to generate compiled code and screen formats, Smith said.

Another feature, File Expert, is a full-screen editor for Ramis, IBM's IMS, VSAM, QSAM and ISAM file descriptions. Using File Expert, data can be assembled to and from flat, hierarchical or relational files for reports. A file description editor for Cullinet Software, Inc.'s IDMS/R, based on File Expert, is also offered with the new release.

Bozman

CONTINUED FROM PAGE 23

than six months' DB2 experience.

Concerned about DB2 sales, IBM took its own snapshot of the DB2 user base last year. The survey's results were reported to the BMC conference by Marilyn Bohl, the former DB2 product manager who resigned last August to become vice-president of development at Digital Research in Monterey, Calif.

IBM's survey of those who bought DB2 last year, Bohl said, showed that 51% still run IMS, IBM's traditional transaction-processing DBMS. About 25% had no other DBMS installed, Bohl reported, while another 12% owned a competing relational DBMS.

When DB2 Version 2.0 becomes available for shipment in October, it will contain referential integrity, auditing features and improved recovery features — all of which were lacking in DB2 Release 1.3 [CW, April 25].

In view of these changes, it would be reasonable to expect that DB2 will be pressed into increasing production use, at least in those large shops that are planning to convert to the MVS/ESA operating system and produce transaction-oriented relational applications.

A case in point is Flying Tigers, a DB2 site that has 10 production tables, each with 300,000 or more records. Steve Kwan, a DB2 data base administrator who attended the BMC conference, reported that his IBM 4381 required CPU minutes — instead of CPU seconds — to generate certain inventory reports. As slow as that seems, Kwan says, DB2 still saved Flying Tigers time.

What does the future hold for DB2 users? Well, IBM has done quite enough arranging for now, BMC's Olson believes. He says he expects some enhancements in 1989 — but nothing on the order of what happened two weeks ago.

Looking behind and ahead

Behind the scenes, IBM is said to be working on adding distributed data base technology to the DB2 product line. To do this, IBM will be applying artificial-intelligence features to help PC users ask remote DB2 data bases for answers to their queries.

And that's not all. "IBM's intent is to provide a high-level programming product using LU 6.2 and APPC as a call interface to [remote] applications," says Bohl, who worked at IBM for 19 years.

Now that IBM is listening closely to users, ease of use will be the goal of future DB2 systems, Bohl says. And yet a lot of work remains to be done. "It's a great world when anybody can update a data base from anywhere," Bohl says. "But it will be some years from now before that happens." Users may infer that, like a time-release capsule, DB2 features will be delivered in measured doses.

Bozman is *Computerworld*'s Chicago-based Midwest correspondent.

Expert system

CONTINUED FROM PAGE 23

troubleshooters by saving them hours of poring over MVS performance data, according to Bruce Ketchledge, a developer of the product at ADR.

Mindover MVS scans the mainframe with the same procedures used by ADR's Look MVS operating system performance monitor. Look MVS is not a prerequisite for Mindover MVS, however.

A communications link tied to the monitor transmits information to the expert system on a PC. The PC must be an IBM Personal Computer AT or Personal System/2 Model 50, 60, 70 or 80 running IBM PC-DOS 3.0 or higher with a 2M-byte hard disk.

Minding metrics

Mindover MVS measures about 400 metrics — such as the number of jobs in a wait state or system-task paging as a percentage of the total paging rate — across 12 areas of MVS performance, including CPU throughput, I/Os, paging and swapping.

By operating 24 hours a day, it can spot problems in system use and make recommendations on what to do about them while they are still small, according to Michael Anthony, director of systems product marketing.

Data collected from the operating system is fed into an analysis module on the PC, where exceptions or problems trigger a forward- or backward-chaining reasoning process through the rules of the system's knowledge base. The rules represent the combined expertise of ADR's performance analysts, Ketchledge said.

Users may recreate the reasoning chains behind Mindover MVS recommendations, providing an explanatory process to a junior system programmer learning MVS tuning, Anthony said. References to appropriate IBM documentation are also provided, he said.

As an example of the product's use, Anthony described a system operator using it to troubleshoot poor response time. Mindover MVS responds that excessive paging is slowing the system down and recommends that operators consider isolating the frequently accessed data set in storage to reduce paging. It would take the product 20 to 40 minutes to analyze such a situation and make recommendations, Anthony said.

The vendor has been shipping the first release of Mindover MVS at a price of $42,500 since March 31, with 16 licenses so far.

NEW PRODUCTS

Systems software

A cross-reference and documentation software package for IBM MVS-based systems has been announced by **Computer Concepts, Inc.**

Called QXR-19, the software is said to allow users to build a data base of cross-reference information to manage MVS libraries. According to the vendor, it can access and research libraries containing source code, object modules, procedures, IBM JCL, load modules and user-defined records. The data is output to a data base that can be accessed either on-line or by batch processing.

QXR-19 can be run interactively under IBM's TSO, ISPF or Roscoe. It licenses for $295 per month for a one-year lease and $8,850 for a 99-year lease.

Computer Concepts, Suite 150, 9900 S.W. Greenburg Road, Tigard, Ore. 97223. 503-639-1450.

Applications packages

An enhanced version of **Dataviews**, a line of graphics software products for displaying data in real-time graphics, has been announced by **V. I. Corp.**

Dataviews 6.0 allows users to design their own interface and control application programs, the vendor said. Other features include enhanced cut-and-paste capabilities and 39 graphics options.

Dataviews includes DV-Tools, a subroutine library that incorporates input and graphics output capabilities, and DV-Draw, a drawing editor.

Dataviews runs on engineering workstations under Unix or IBM's MVS. Prices start at $7,700 for DV-Draw and $17,700 for DV-Tools and DV-Draw. Run-time licenses start at $3,000.

V. I. Corp., Amherst Research Park, Amherst, Mass. 01002. 413-253-3482.

A business planning and control and financial modeling software package for Digital Equipment Corp. VAX systems has been announced by **Holistic Systems, Inc.**

Holos features a personal computer-like user interface, multidimensional modeling and links to SQL-based data bases, according to the vendor. It provides both tabular and graphical reports, which can be used for input and modification of information as well as for output, the vendor said.

Holos is priced from $40,000.

Holistic Systems, Suite 2500, 7400 E. Orchard Road, Englewood, Colo. 80111. 303-721-0276.

Utilities

Davis, Thomas & Associates, Inc. recently released Version 3.0 of its remote print software, DTA/Print.

DTA/Print 3.0 was designed for IBM VM Spool queues as well as for IBM DOS/VSE Power queues. The software is a report distribution and viewing system that reportedly allows any report in any Power or VM Spool queue to be routed to any attached CICS printer or CRT. Security features allow any Power or VM Spool file protection as well as system and printer control.

DTA/Print 3.0 costs $5,000 for access to Power queues and $7,000 for access to both Power and VM Spool queues.

Davis, Thomas & Associates, 550 Waterford Park, 505 N. Country Road 18, Minneapolis, Minn. 55441. 612-591-6100.

A utility for validating IBM JCL syntax and standards has been announced by **Consumer Systems Corp.**

Called **JCL Audit**, the software is said to allow users to determine if their OS/MVS JCL is free of errors before the production run. It also reduces job reruns due to JCL errors, the vendor said, and helps ensure compliance with corporate JCL naming conventions.

JCL Audit costs $8,250.

Consumer Systems, 2 E. 22nd St., Lombard, Ill. 60148. 312-495-8822.

Development tools

Softech, Inc. has announced an improved pricing structure for its **Ada-86** Ada cross-development system for the Intel Corp. line of microprocessors.

One object code license for the full line of Intel microprocessor cross-development systems hosted on a Digital Equipment Corp. Microvax 2000 is now priced at $4,000. Licenses for more powerful DEC processors are priced as follows: Microvax II, $8,000; Microvax 3500, $9,000; VAX 8250, $10,000; VAX 8600 series, $18,000; VAX 8700, $21,000; and VAX 8800, $25,000.

Softech, 460 Totten Pond Road, Waltham, Mass. 02254. 617-890-6900.

Sybase, Inc. has ported its **Sybase Datatoolset** line of application tools to Sun Microsystems, Inc.'s Sun386I workstation.

The Datatoolset is a component of the Sybase system, an SQL-based relational data base management system for on-line applications.

A development version of the Sybase Datatoolset for the Sun386I workstation costs from $3,000 to $4,000. The run-time software system, when purchased with the development system, is priced at $1,000.

Sybase, 2910 Seventh St., Berkeley, Calif. 94710. 415-548-4500.

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MICRO BITS

Ed Scannell

Microsoft snubs Unix?

A vested interest? Microsoft may be soft-pedaling its commitment to the Unix market in the face of recently lost momentum. Late last month the company put out a backgrounder discussing and explaining binary standards (defined as a group of applications compatible with a hardware base), and questioned whether Unix would ever become such a standard.

This is a curious development, considering that Microsoft was once a major advocate of Unix and has long promoted the fact that Xenix outsold all other derivatives of Unix. Adding to the irony is that Microsoft signed a deal with AT&T to develop a Unix version for the 80386.

However, in the highly political Unix wars, Microsoft may have come out on the losing end with the recent Unix announcements from AT&T and Sun Microsystems — Microsoft didn't even attend the AT&T/Sun press conference. And Microsoft has been hesitant to discuss the Presentation Manager-style interface it hinted about delivering for Unix.

Continued on page 34

Lotus spices up corporate CD

BY DOUGLAS BARNEY
CW STAFF

CAMBRIDGE, Mass. — Lotus Development Corp., which continues to plug away at the nascent market for CD-ROM data, today announced the second release of CD/Corporate, a product that delivers data on 12,000 public U.S. corporations.

Primary users have been in banking, investment, consulting, accounting and schools of management, Lotus officials said.

The system, acquired last year from Datext, Inc., consists of a compact disk/read-only memory (CD-ROM) player and a set of CD-ROM data disks containing the information. Users query the system in a variety of ways via menus and can print the results. According to David Roux, vice-president of Information Services Group at Lotus, the system is intended to provide pertinent information in a useful form.

Although highly beneficial for particular organizations, CD/Corporate is not inexpensive. Users get the player and 600M bytes of compressed data at prices ranging from $13,000 to $18,500.

Access Improved

The latest release boasts a host of new features, primarily aimed at providing users with more sophisticated data base querying and screening capabilities. Now, users can employ the menus to screen and access information based on some 150 descriptive and financial variables.

CD/Corporate consists of seven different data bases: Disclosure II, Investext, Promt, ABI/Inform, Who's Who in Finance and Industry, Media General and Market Guide.

From these data bases, users can get financial statements, 10K excerpts, investment analysis reports, trade-press abstracts, executive biographies and stock prices and trading data.

The system even includes esoteric bits of information, such as Digital Equipment Corp. President Ken Olsen's resume.

The system also features access to Dow Jones News/Retrieval and CD/Newsline.

CD/Corporate is considered to be part of Lotus's One Source product line, which includes a variety of numeric and reference data bases, all accessed via CD-ROM.

One Source includes data bases on international companies, commercial banks and sav-

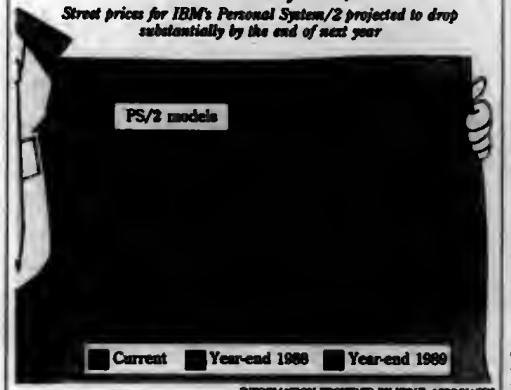
Continued on page 35

Inside

Data View

Psst! Wanna buy a PS/2?

Street prices for IBM's Personal System/2 projected to drop substantially by the end of next year



INFORMATION PROVIDED BY WOHL ASSOCIATES
CW CHART: AMY J. SWANSON

Firm pushes laptop package over piecemeal purchases

BY DOUGLAS BARNEY
CW STAFF

EVERETT, Mass. — Laptop computers are frequently bought like furniture: The customer often picks out one main piece and then loads up on accessories until the room is filled. The machine itself may be bought; then things like modems and printers are laboriously added.

A firm called Microdirect, Inc. says this is the wrong way to buy a laptop. Instead of piece-by-piece purchasing, the firm is offering an entire system: the laptop, an inkjet printer and an optional battery-powered portable

Continued on page 35

Microdirect's *laptop system*

If you want the best there's only

Whether you want the best portable or desktop, the best 80286- or 80386-based personal computer, there is only one choice: Compaq. Because COMPAQ personal computers are consistently rated the best in each class by both industry experts and sophisticated users.

For instance, the COMPAQ DESKPRO 386/20 and the COMPAQ PORTABLE 386 are the most powerful personal computers in the world. Both are based on the 32-bit Intel® 80386 microprocessor, running at a blazing 20 MHz. Both offer the most storage and memory in their classes. And both feature performance enhancements such as concurrent bus architecture, disk caching, and high-speed coprocessor options. All of these features work together to deliver system performance that rivals minicomputers'.

The groundwork for these innovations was laid by the industry's first 80386-based personal computer, the 16-MHz COMPAQ DESKPRO 386. Still outperforming most 80386 machines, it offers high-performance capabilities to users moving up to this class.

In the arena of 80286-based personal computers, the 12-MHz COMPAQ DESKPRO 286 runs your software up to 20% faster than most of its 10-MHz competitors.

No one even comes close to Compaq in portable computing. Because no one but Compaq builds portables with all the features sophisticated users need. The 20-lb. COMPAQ PORTABLE III is the smallest full-function 80286-based computer that truly gives you the power of a desktop. And the COMPAQ PORTABLE II still offers more internal expansion capabilities than any other portable.

*Based on an independent survey of major brands. †Based on an independent survey of 209 FORTUNE 1000 companies.

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Computer users at every level will find that COMPAQ computers represent the best solutions. We've consistently expanded the limits of personal computer technology with advanced features that optimize overall system performance. All while preserving your investment in industry-standard hardware and the world's largest library of business software. Compaq also works to engineer each computer to meet exacting quality and reliability standards, so it's ready to withstand the rigors of the real world.

These are all reasons why Compaq earns the highest quality ratings from computer experts. And unsurpassed satisfaction ratings from computer users.* It's also why, this year, more FORTUNE 1000 corporations plan to add Compaq to their approved vendor lists than any other brand.†

If you want the best personal computer, you have only one choice. Call 1-800-231-0900, Operator 50. Or, in Canada, call 1-800-263-5868, Operator 50. We'll give you a free brochure or the location of the Authorized COMPAQ Computer Dealer nearest you.

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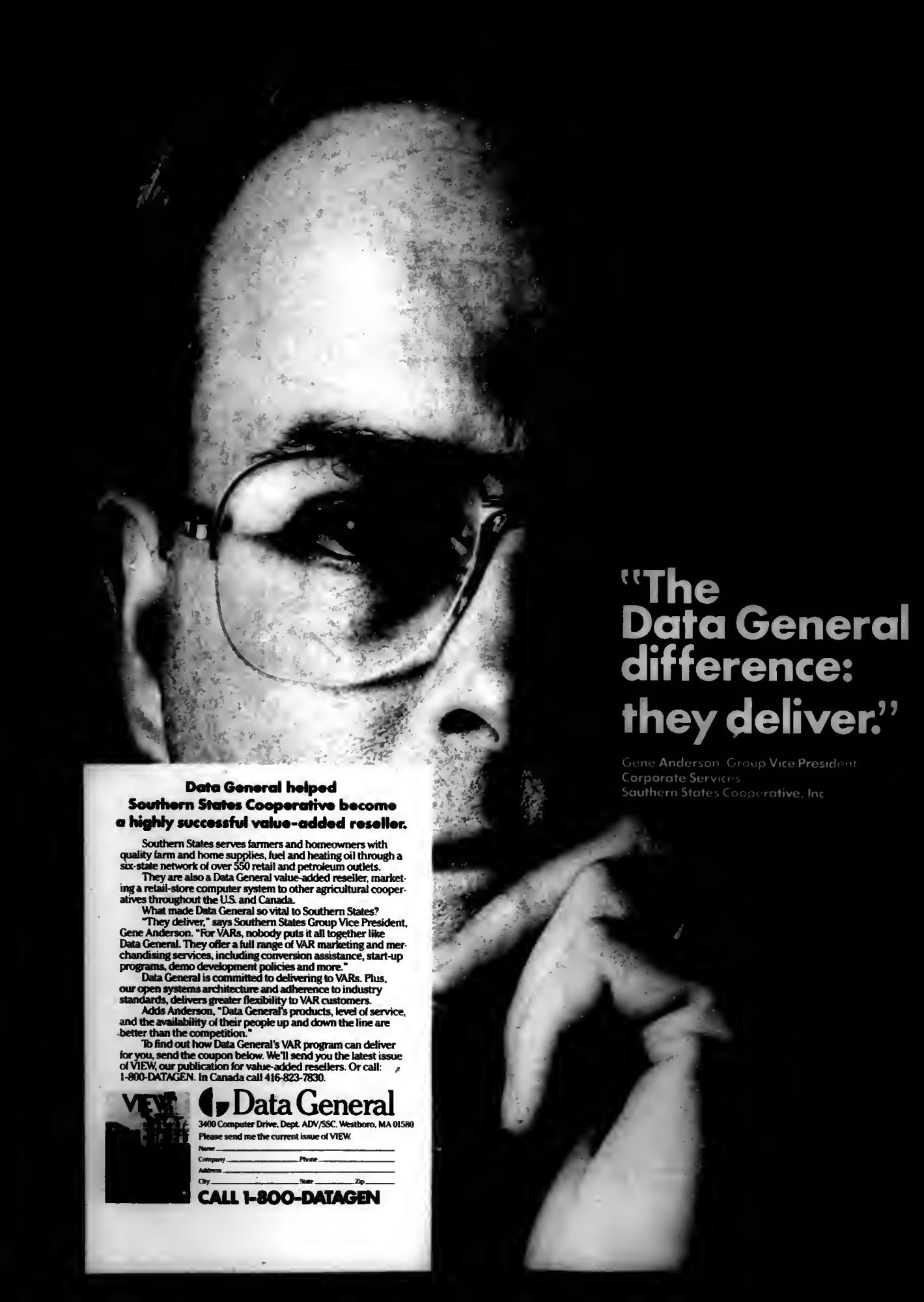

"The Data General difference: they deliver."

Gene Anderson Group Vice President
Corporate Services
Southern States Cooperative, Inc

Data General helped Southern States Cooperative become a highly successful value-added reseller.

Southern States serves farmers and homeowners with quality farm and home supplies, fuel and heating oil through a six-state network of over 550 retail and petroleum outlets.

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What made Data General so vital to Southern States?

"They deliver," says Southern States Group Vice President, Gene Anderson. "For VARs, nobody puts it all together like Data General. They offer a full range of VAR marketing and merchandising services, including conversion assistance, start-up programs, demo development policies and more."

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SMALL TALK

Jeffrey Tarter

Apple cramps buyers' style

Thanks to Apple's look-and-feel lawsuit against Microsoft and Hewlett-Packard, corporate buyers these days seem to be full of doom and gloom. "Just when we were about to achieve an industry standard graphical interface," they complain, "Apple kicks us back to the bad old days of the A Prompt. . . . Now we've lost our best chance to make computers easy to use."

Well, maybe. But I suspect that much of the knee-jerk reaction to the Apple suit reflects profound misconceptions about the Macintosh interface concepts that Apple successfully popularised. Especially among traditional personal computer users, there is a growing respect for the value of graphical interfaces and for the standardization that Apple managed to impose on Macintosh-based software.

However, there's also a widespread belief that graphical interfaces work like pixie dust — sprinkle a handful of icons over a PC, and it suddenly becomes intuitively easy to use.

Much of what PC users believe about Macintosh-like interfaces is a collection of myths:

Myth I: The Macintosh's interface makes all applications look alike.

For the last four years, Apple has gone to a good deal of trouble to persuade Macintosh developers to follow detailed interface design guidelines. These guidelines define visual elements, including menu styles, dialogue boxes and icons.

The result of this is a framework of consistency that helps novice users learn the rudiments of an application much

Continued on page 35

Clone maker's prosperity tied to success of its PS/2-compatible chip sets

To clone or not to clone has never been a question for Chips and Technologies, Inc., which was formed to create chip sets for vendors seeking to replicate the IBM Personal Computer AT. The firm achieved swift success — net income rose from $1.9 million in fiscal 1986 to $24.7 million in fiscal 1987 — and was instrumental in creating competition in the clone market that ultimately drove prices down and pushed quality up.

Recently, Dell Computer Corp., a Chips and Technologies customer, became the first systems vendor to formally announce an IBM Personal System/2 Micro Channel compatible, followed closely by Tandy Corp.'s PS/2 Model 80-compatible using Intel Corp.'s chip set.

These machines have demonstrated how the future of Chips and Technologies is tied to the success of its PS/2-compatible chip sets.

Chips and Technologies' *Campbell*

But, is corporate America going to buy Micro Channel machines from compatible vendors when it is not even certain that it will convert to Micro Channel machines from IBM?

Even Gordon A. Campbell, president and chief executive officer of Chips and Technologies, said he would have trouble justifying a Micro Channel machine for some members of his staff.

West Coast correspondent James A. Martin and Senior Editor Ed Scannell questioned Campbell recently on key issues surrounding IBM's Micro Channel bus.

Besides Dell, how many OEM vendors have you signed up so far?

Originally, we visited 55 vendors, and at least 30 to 35 of them have been actively pursuing Micro Channel projects.

Most of those, I assume, will turn into Micro Channel machines at some point.

How long after a firm receives the chip sets will a machine be ready for market?

It varies. We've had people who would show a product and make an announcement literally within two weeks of first getting the chip sets. But it's much more typical for them to take two to three months.

Will we see a rush of Micro Channel machines by mid-year?

I think you'll see a number of different Micro Channel-compatible products, as well as systems being shown at Comdex/Spring '88.

I think this year, the show will have a little more significance than normal because of the PS/2 compatibles that will appear for the first time.

Concerning IBM's threat to sue over the Micro Channel, how much of that has

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Macintosh tool fails to dig niche in market

BY JULIE PITTA
CW STAFF

CUPERTINO, Calif. — Apple Computer, Inc.'s personal tool kit for the Macintosh, Hypercard, has proven to be something of a disappointment. Despite a celebrated launch last August, Hypercard has failed to capture the imaginations of corporate users and large third-party software developers.

"Apple had very lofty goals for it [Hypercard], and they haven't been met yet," said Bill Higgs, an industry analyst for Infocorp, Inc. "They had hoped to create a whole new class of software based on Hypercard, but the major software developers and publishers haven't used it."

Touted as a tool that would allow the average user to create personalised applications, Hypercard appears to have gained only lukewarm acceptance among corporate users. Like a new toy, Hypercard received a lot of attention at the beginning, but it was then set aside like so many other gadgets.

Hypercard

Price: $49 stand-alone, but currently bundled with every new Mac

Requires:
- Mac Plus, SE or II
- 2MM bytes of RAM for use with other applications under Multifinder
- Two 800K-byte flexible disk drives or one hard disk drive and an 800K-byte flexible disk drive
- Two expansion slots

"It's dangerous to assume that users will take advantage of a feature just because it is available to them," Higgs maintained, noting that few users will spend the time necessary to develop Hypercard applications. "The way Hypercard is receiving more widespread use is by diligent users passing along Hypercard 'stacks' they have written to co-workers," he added.

Michael Cromar, director of information resources for American President Companies Ltd. (APC), a shipping firm based in Oakland, Calif., said Hypercard has yet to be "institutionalised" at his company.

"It hasn't taken off," Cromar admitted. "It needs to be multituser and be able to work in a multitasking environment to really take off so that information can be shared with other users."

For his own use, Cromar has built personalised data bases

Continued on page 34

Defense network mimics human brain

BY ALAN J. RYAN
CW STAFF

SAN DIEGO — Centuries ago, brain power and human logic helped advance combat weapons from hands and rocks to guns and cannons. But in the near future, sophisticated defense systems may incorporate computers that actually mimic the human brain.

To achieve this goal, the Army's Laboratory Command, Electronics Technology and Devices Laboratory has recently awarded a multiphased contract to Hecht-Nielsen Neurocomputer Corp. (HNC), to identify 10 Army battlefield areas that could be improved using neural networks.

'Learning by example'

Neural networks provide a computer with the ability to learn by example. The most significant difference between neural networks and traditional computers, including artificial intelligence systems, is their self-organizing ability.

This is a technology that could prove critical in defense applications in which human error could cost lives.

The systems, which are based on models of how the human brain encodes and processes information, have not been previously used in defense systems, according to Robert North, president and chief executive officer of HNC.

North said the HNC neural network architecture provides many of the capabilities needed to solve critical defense problems. According to North, even simple neural networks exhibit complex behaviors such as learning, pattern recognition and associative memory.

These capabilities, difficult or

Continued on page 35

Top sellers

Software: April 25-29

1	Lotus's 1-2-3
2	Fifth Generation Systems' Fastback
3	
4	IBM's Displaywrite 4
5	
6	Ashton-Tate's Dbase III Plus
7	
8	IBM's Fixed Disk Organizer
9	
10	

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CW CHART

Scannell

CONTINUED FROM PAGE 29

Microsoft can't wriggle out of its commitment to Unix altogether, but we think people will be watching a little more carefully what Microsoft does in that market.

Such a deal. If I were one of the folks over at Ashton-Tate, I'd be feeling a little like someone who just bought swampland in Florida.

In an editorial in its monthly newsletter, Wordtech said its experience in working with Dbase IV SQL technology led the company to reject it. Wordtech, if you remember, sold its SQL technology to Ashton-Tate last year.

Under Wordtech's development approach, an SQL query is translated into the equivalent Dbase query, which is then executed by the Dbase engine.

Wordtech said this process is slow and memory-intensive, but the most limiting factor is that it doesn't allow Dbase to talk with larger systems. Dbase IV's "one-way" communication capability only lets mainframes query micros, according to the editorial.

According to Wordtech, a better approach to SQL is to bring together a Dbase front end with an SQL engine. This approach allows greater interoperating system communications and improved performance.

But Ashton-Tate plans to do exactly this, based on its SQL Server agreement with Microsoft, so the Wordtech criticisms apply only to Dbase IV as a standalone system.

Wordtech said it is committed to this same approach in developing SQL support for its products.

It won't be long now. At a recent press conference, Phillip White, Wyse Technology's president, said that the patents on IBM's Micro Channel architecture could be available in Europe as early as September.

White said he doesn't expect them to be available in this country, however, until next April. While Wyse is interested in Micro Channel technology, White said his company probably wouldn't deliver a clone until all the legal ambiguities were clarified.

Commenting on the recent Micro Channel architecture clones introduced by Tandy and Dell, White made an interesting point about why the two, in part, were early to announce. Because both companies have control of their own distribution channels, they don't need to indemnify third-party dealers, which could prove costly if IBM eventually decides to bring suit.

While this isn't the main reason Compaq and other vendors that rely on dealers are hesitant to deliver Micro Channel architecture clones, it is another thing to think about.

Aside from the usual talk of Micro Channel, White said he expects the demand for Presentation Manager to be slow because of the ongoing shortage of memory chips and their prices (which are expected to continue to rise).

He added that he doesn't think companies with large numbers of 512K- and 640K-byte IBM Personal Computers will want to dish out major bucks to get the necessary 3M to 4M bytes to run both Presentation Manager and the versions of OS/2.

Scannell is a *Computerworld* senior editor, microcomputing.

Macintosh

CONTINUED FROM PAGE 33

such as phone lists and calendars through the use of Hypercard. "I entered my Rolodex," he explained, "by using it. I can remember someone's first name and his company, and with a key word, I can find his full name, title and phone number from a list of 2,000 in a matter of minutes. On an individual basis, it is very handy."

Currently, Cromar is building a specialized data base using Hypercard to list all the publications and documents produced in his department. He hopes to share that data base with other Macintosh users at APC.

Third-party support sought

Steven Morelli, a general manager of financial planning and control at H. J. Heinz Co., said he would like to see major third-party Macintosh software developers support Hypercard so that it could be linked to widely used data base, word processing and spreadsheet packages.

"I would like to have access to [Microsoft Corp.'s] Excel from Hypercard," he said. "If there were linkages to packages like Excel, it could become a real executive tool."

Hypercard has been used to build a part-graphics part-text data base detailing certain processes within Heinz, such as the creation of certain food products.

Jim Hayes, vice-president of Seafirst Corp., a Bankamerica Corp. subsidiary, and general manager of its electronics services division, said Hypercard has received only limited use within Seafirst because of memory constraints.

Most of Seafirst's Macintoshes have either 512K bytes or 1M byte of random-access memory, Hayes said. For optimal use, Hypercard requires at least 2M bytes of RAM.

Hayes said a memory upgrade for Hypercard would not be justified because of the cost. "I don't detect a lot of general enthusiasm for it," he said.

Product protects files from MS-DOS wipeout

BY ED SCANNELL
CW STAFF

MANCHESTER, N.H. — Softlogic Solutions, Inc. has announced a data protection program that ensures the recovery of erased information.

The Data Guardian does not let random chance decide whether file recovery is possible. It blocks Microsoft Corp.'s MS-DOS from writing over an area where a deleted file is located.

The program is actually a series of interrelated programs that guarantee file recovery by taking advantage of the way MS-DOS works.

When MS-DOS deletes a file, a Softlogic spokesman explained, the file name is removed from the directory. The physical data, however, is left on the disk until the space occupied by that file is reused. So the more someone uses a disk following the erasure of a file, the less recoverable a complete file becomes.

Resurrect method chancy

Other file recovery systems recover files by resurrecting the physical data before DOS reallocates the data space and before the directory is reused. Users can recover a complete file only if the space has not been altered and the directory entry is still unused.

When a file is deleted, Data Guardian automatically stores the date, time and file name in a separate directory and saves the data space where the file is located for a period of time specified by the user, which can be up to 99 days.

A visual display and pattern of musical tones lets users know if the Data Guardian system is active or not when a file is deleted.

Programs unique to the Data Guardian include an optional track saver function that protects the hard disk surface by repositioning the drive head every 14 seconds when the drive is inactive.

Softlogic will incorporate Data Guardian into its Disk Optimizer 4.0 product, which will be priced at $69.95. Users of earlier versions of Disk Optimizer can upgrade for $22.50 direct from the company. The product is available immediately.

Samna's page view shows up

ATLANTA — Microsoft Corp. added it to its popular word processor. Now Samna Corp. has followed suit by adding a page preview feature to its high-end word processing software.

According to the company, its latest releases, called Samna Word IV and Samna Plus IV, now allow users to view a document as it will appear when printed.

The feature is useful as documents become increasingly complex, taking on many of the elements pioneered by many desktop publishing packages.

Users can see how fonts, graphs, text and scanned images will look on the page, which can be fine-tuned prior to printing. This saves the time spent printing awkward-looking documents that must be reworked, and saves on paper and toner cartridges as well. The packages provide three levels of magnification, allowing users to hone in on a particular image.

The packages also include a thesaurus based on *The Prosimity/Merriam-Webster Thesaurus*, a table of authorities generator and added support for scanned documents and images.

Samna word processing software has been particularly successful in high-end markets such as legal document processing.

Samna Word IV is priced at $595, and Samna Plus IV sells for $695. UNIX versions range from $745 to $11,900, depending on the particular system and hardware configuration.

Defense

FROM PAGE 33

impossible to achieve with conventional computers, can help deliver advanced defense systems for applications such as radar, sonar and image processing, data fusion and data compression, opposing force modeling (war games) and weapons aiming and steering, according to North.

The three areas where the neural network technology will likely impact defense computing are knowledge processing, sensor processing and control, North said.

In knowledge processing, the neural network is able to tolerate contradictory and imprecise data and can process large amounts of information quickly.

"Neural networks can make sense of incomplete or imperfect data, such as an imperfect photograph or an imperfect drawing," explained Jacqueline Townsend, a spokeswoman at HNC.

Sensor processing is aimed at tuning modern sensor systems that already require exceedingly complex algorithms for interpretation.

The neural networks develop their own algorithms based on experience, which may help overcome the complexity barrier while delivering defense systems capable of human-like discrimination.

According to Townsend, "Neural networks, being trained by example, cut down on the software development time."

In control applications, the neural network's self-programming capabilities could lead to robots that can learn to perform tasks by "watching" humans perform them or by feedback from a trial and error approach.

Robots could be used to perform dangerous or repetitive tasks.

Tarter

FROM PAGE 33

more quickly than they do with Microsoft MS-DOS applications.

But, as soon as you move beyond the basics and deal with advanced applications features, all bets are off. A user who expects to migrate easily from Ashton-Tate's Dbase Mac to Acius' Fourth Dimension or Nashoba Systems' Filemaker Plus — or from Microsoft's Microsoft Word to Wordperfect Corp.'s Wordperfect — learns that each application has special quirks that require a serious time investment in learning.

In fact, Macintosh software is occasionally harder to learn than comparable PC applications, because the bit-mapped display allows developers to create screens that are almost as complicated as airplane cockpits.

Myth II: Macintosh-like interfaces will eliminate most of the confusion that MS-DOS users now face.

Graphics environments, such as Microsoft's Windows and the Presentation Manager, may provide a superficial imitation of the Mac interface, but they don't confront the real problem — the MS-DOS world's underlying lack of hardware and software standards.

Sending a file to a printer is an uncomplicated task in the Mac environment, not because of the graphical interface, but because Apple designed its computers, printers, networks and operating system from the ground up to work as a tightly integrated system.

Even with a graphical interface, PC users still face a bewildering permutation of peripherals, network protocols, file formats and software kludges that are often necessary to make the PC handle tasks it was never designed to perform.

Worse, the Windows and Presentation Manager graphical environment falls considerably short of the Mac original in key ergonomic areas. Rather than insulate the user from nuts-and-bolts problems at the operating system level, Microsoft has mysteriously chosen to retain some of the least intuitive features of the traditional DOS environment, including cryptic eight-character file names, an obscure command language and navigation by way of directories and paths.

Myth III: Without a common graphical user interface, the software industry will never settle on any meaningful software standards.

Microsoft and IBM would like users to believe that Windows and the Presentation Manager represent the only possible standard for graphical interfaces. In reality, there are a growing number of competing environments — such as Tandy's Deskmate and the Sun-AT&T Open Look which developers have used to create graphical applications that are Mac-like and legal.

Moreover, the ruckus over graphical interfaces obscures the fact that there are already some significant interface designs that have quietly become de facto industry standards. Lotus's moving-bar menus, Software Publishing, Inc.'s PFS interface and Ashton-Tate's Framework format are familiar to literally millions of users and continue to serve as models for software developers.

Jeffrey Tarter is editor and publisher of "The Soft-Letter," a Cambridge, Mass.-based newsletter for software developers and publishers.

Laptop

FROM PAGE 29

cellular telephone and modem/cellular interface.

In addition to sending and receiving data, the cellular phone can be used for more mundane tasks such as calling the boss, a spouse or a customer. Total cost is $4,995 to $5,500, depending on configuration.

And while many laptops include a modem, these devices require access to a telephone. But Microdirect's cellular capability allows users to communicate with host systems from almost wherever they happen to be, the company claimed.

The laptop, based on the Intel Corp. 80C88 processor, comes standard with 1M byte of random-access memory, two 720K-byte 3½-in. floppy disk drives and a built-in 1,200-bit/sec. Hayes Microcomputer Products, Inc.-compatible modem. A 20M-byte hard disk drive is optional. Systems are also available without a printer or telephone.

The systems, which come with a one-year warranty, are serviced through Bunker Ramo in more than 80 U.S. cities.

Lotus CD

FROM PAGE 29

ings and loan institutions, high technology businesses and U.S. public and private companies.

CD/Corporate will be sold through the Lotus direct sales force, and requires an IBM or IBM-compatible Personal Computer with a hard disk drive and 640K bytes of memory, according to the company.

Users requiring access to CD/Newsline need a 1,200- or 2,400-bit/sec. Hayes Microcomputer Products, Inc.-compatible modem.

HP to sell Laserjet accessory

BY JAMES A. MARTIN
CW STAFF

PALO ALTO, Calif. — Hewlett-Packard Co. has recently announced that it will support and distribute the QMS, Inc. Jetscript accessory kit, which reportedly provides the HP Laserjet Series II printer with Adobe Systems, Inc. Postscript page-description language capabilities.

The $2,795 Jetscript accessory kit, released by QMS earlier this year, includes a full-sized add-in board with 3M bytes of random-access memory that plugs into any IBM Personal Computer AT, XT and compatible and the Personal System/2 Model 30. Also included is another circuit card for the Laserjet I/O slot, Postscript interpreter code and soft fonts to be installed on the IBM PC board and connecting cable.

According to the company, the Jetscript kit is available immediately.

A match made in heaven

The marriage between Postscript and Laserjet was inevitable and much anticipated, analysts said.

Postscript's popularity began in the Apple Computer, Inc. laser printer market and has recently been adopted by many IBM PC-compatible printer manufacturers.

While the HP Laserjet is a top seller among IBM PC and compatibles users, its proprietary printer command language, PCL, does not support Postscript.

Clone maker

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been just plain intimidation to gain time in the market?
I thought IBM was reasonably clear in what it said as far back as six to nine months ago. The message was that IBM certainly intended to protect trade secrets, trademarks, etc. but that it has a standard policy of licensing a patent portfolio.

Too many people asked the wrong question, which was, "Will you license the Micro Channel?" IBM said no. The right question would have been, "Will you license the patent portfolio, which includes potentially some Micro Channel patents?" IBM's answer to that has always been consistent: Yes.

Now that Micro Channel clones are coming out, is it possible IBM might make some changes to the Micro Channel to throw the clone makers off?
We visited IBM during the first year of Chips' existence and said, "Look at the wonderful job we've done with a chip set that allows you to build an AT with one-fifth the amount of chips. Why don't you throw out your old design, use our design and have great cost savings?" They looked at us, chuckled and said, "You just don't understand."

It turns out that when IBM brings out a model like the AT, they have to fill the distribution channel and support it with spare parts and service manuals. This pipeline is so large that a single change in something in that pipeline would wipe out the savings from a new chip set.

What that illustrates is that it's very difficult for IBM to continually make changes when they introduce a machine. What we will see, I think, are new models being introduced more rapidly and the possibility of tying IBM hardware to its software.

Can you successfully have Micro Channel features — like the multiple master arbitration scheme on an AT bus — that allow multiple processors to act in unison?
To try and change the AT bus you would end up with no add-in cards. If you try to add additional control signals or diagnostic signals, which are in the Micro Channel, you wind up with a nonstandard AT bus and cards that won't work except with a standard AT bus. The two standards will have to coexist for some time, but until we get some software or some reasons to use it, I wouldn't buy a PS/2 for my secretary. If there was an application she could use, I would.

Are you seeing much interest in the Model 30 chip set now, or are most vendors interested in the Micro Channel?
There doesn't appear to be an overwhelming interest by compatible manufacturers to do that machine. The compatible guys will probably go for an Intel 80286-based Model 30, which would be a much more successful machine. IBM has said that almost all its PCs in the future will be 80386-based, with some 286 stuff at the bottom. So, I don't think we'll see a lot more 8088- or 8086-based machines.

The dynamic RAM shortage is doing a lot to kill the low end, too. It turns out that the first machine vendors kill is the one that doesn't have enough margin.

There have been reports that Chips and Technologies is designing a 386-compatible microprocessor using hard-wired logic, instead of microcode, as a way of skirting around microcode copyright patent issues. Is there any truth to those reports?
There's been a lot more speculation about that than is merited.

What do you think might happen with the Intel 80486 microprocessor?
If IBM really wants to outdistance the competition, it would change or modify the Intel microprocessor used in its machines. It's not clear that it's in their best interest to continue with a standard processor. So with the 486, I'm not sure IBM will standardize on it. It might be used just in specialty niches.

NEW PRODUCTS

Systems

An electronic filing and imaging system has been announced by **Ovonic Imaging Systems, Inc.**

For users of IBM Personal Computer XTs, PC ATs and compatibles, the system's key components are **Paperchase Software** and the **Paperchase Interface Card**, which allow personal computers to function as personal imaging systems.

The interface card currently operates with Canon U.S.A., Inc. sheet-fed desktop scanners and Canon or Hewlett-Packard Co. desktop laser printers.

Paperchase Software carries a single-copy price of $695. The Paperchase Interface Card is priced from $595 to $1,195.

Ovonic Imaging Systems, Inc., 1896 Barrett St., Troy, Mich. 48084. 313-362-3140.

CPT Corp. has announced an addition to the CPT 9000 series of IBM Personal Computer AT-compatible workstations.

The **CPT 9286**, based on the Intel Corp. 80286 processor, has a clock speed of 8 or 12.5 MHz and includes 1M byte of memory. The system supports as many as two floppy disk drives and three half-height internal hard disk drives. A standard configuration includes one 5¼-in. 1.2M-byte floppy drive, with additional 5¼- and 3½-in. floppy disks available. Users may select either a 20M- or a 40M-byte hard drive.

The CPT 9286 offers a standard half-page, 12-in. amber monitor and a full-page, high-resolution, black-on-white 14-in. monitor.

Prices for the base-level CPT 9286 with a half-page monitor, one 5¼-in. disk drive and an AT-style keyboard start at $2,695.

CPT Corp., 8100 Mitchell Road, Minneapolis, Minn. 55440. 612-937-8000.

Software applications packages

TAP Development Corp. has announced **Advanced Lotus 1-2-3**, a teaching assistance package and continuation of its Spreadsheet Module.

Using 112 multicolor slides to expand on the information the module provides, the package includes a review of Lotus Development Corp.'s basic Lotus 1-2-3, Global Commands, Advanced Functions, Range Commands and Macros.

The one-day course costs $990.

TAP Development, Suite 200, 1820 E. Sahara Ave., Las Vegas, Nev. 89014. 800-231-5455.

Software languages

Key LISP, an implementation of LISP for Apple Computer, Inc.'s Apple II, has been released by **Xprime Corp.**

The product runs under ProDOS with a minimum of 64K bytes on Apple's Apple II, II Plus, IIE, IIC and IIGS. An 80-col. display is recommended for the Apple II, II Plus and IIE.

Key LISP offers more than 220 features, including floating-point calculations, identifier names of unlimited length, automatic type conversion and user-definable macro characters. LISP macros are fully supported.

Key LISP is priced at $149.

Xprime, 10835 Santa Monica Blvd., Los Angeles, Calif. 90025. 213-470-4663.

IBM displays are getting attached to DEC, Data General and Prime computers.

Model 110/160

The fact is, IBM* 3151 ASCII displays are getting attached to all kinds of multi-user systems.

It's not surprising. IBM 3151 displays are inexpensive both to buy and own. Model 160 starts at $399,* including one-year warranty. Other models are available with a 3-year warranty. Add an IBM Maintenance Agreement, and you'll get five years of IBM service for just $54.

The 3151 family of displays provides most of the popular emulations compatible with DEC,™ Wyse,® Data General,™ TeleVideo® and more. Models 310 and 410 utilize unique cartridges which provide additional capabilities: auto dial, PC compatibility and concurrent dual host connectivity.

IBM ASCII displays are everything you'd expect from the company that ships more terminals than anyone. All models are equipped with high-quality IBM keyboards, designed for use with your ASCII applications. Non-glare 14" flat screens in green or amber/gold provide crisp character resolution.

How can you get attached to an IBM ASCII terminal?

For a free brochure and to find a distributor near you, call 1-800-IBM-7257 ext. 84. Or call your IBM Marketing Representative.

IBM

Model 310/360

Model 410/460

*This is IBM's single unit price for a purchase from IBM exclusive of taxes and shipping. Dealer prices may vary. Price is subject to change without notice. Prime is a registered trademark of Prime Computer Inc., Natick, MA. Data General is a trademark of Data General. Wyse is a registered trademark of Wyse Technology. TeleVideo is a registered trademark of TeleVideo Systems, Inc. DEC is a trademark of Digital Equipment Corporation. IBM is a registered trademark of IBM Corporation. © IBM 1988.

DATA STREAM

Merv Adrian

Common idiom needed

Why can't our applications talk to one another? You use a Compaq and I use a Mac — so what?

We want the ability to move data easily between spreadsheets or data bases, even to move graphics files across the operating system barrier, without losing the rich meaning encapsulated in the application formatting. This is the latest connectivity frontier, one that vendors are just starting to cross.

A lot of attention has been given to networking protocols like Transmission Control Protocol/Internet Protocol (TCP/IP) and the Open Systems Interconnect (OSI) model, which were designed to standardize information movement from one system to another.

You would think that when we finally have mature, industry-wide networking standards, the desktop user will be able to move comfortably to the correct desktop environment for a particular task.

For example, install an Ethernet network running TCP/IP or the upper layers of OSI. Keep a couple of Apple Macintoshes for the publishing applications, a Sun workstation or two for the really high-powered scientific and engineering programming tasks, add an IBM Personal System/2, and you've built the working environment of your dreams.

Continued on page 42

Customer service tops the list

Tymnet's Fenn steers firm through shifting waters of user environment

The explosion of mergers and acquisitions in the business world, coupled with the need to utilize technology for competitive advantages — for example, to increase product and service delivery — is pressuring corporate network users to find even more cost-effective alternatives.

Tymnet, McDonnell Douglas Network Systems Co.'s new president, Al Fenn, formerly vice-president of network technology development, shared his views with *Computerworld's* West Coast Bureau Chief Kathy Chin Leong during a recent interview. His vision for the packet-switch vendor includes migrating Tymnet's business strategy to accommodate the changing nature of the corporate user environment.

Tymnet's Fenn

Can you respond to reports that Tymnet has been losing money?

We can't give out levels of detail, but I can tell you this: We are expanding our sales efforts. For 1987 and 1988, we have been increasing expenditures in R&D as a percent of sales. This makes a statement about Tymnet investing in its own business. We think the business is healthy and growing. It is an attractive marketplace. The negative viewpoints of the packet-switch business are wrong.

What are Tymnet's top priorities right now?

At the top of the list is customer service — ensuring that we have the kinds of products and services customers need, and that we deliver quality products that are reliable. My No. 2 goal is to broaden our general business structure. Instead of focusing only on packet switching, we need to include support for T1, voice and so on.

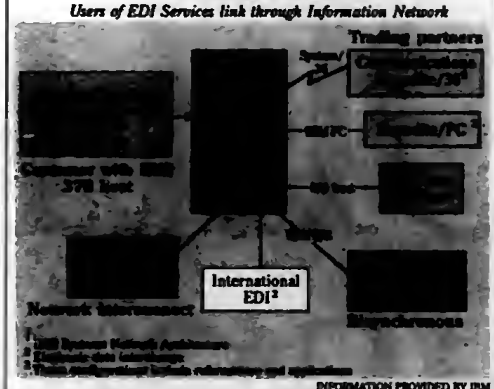
Packet switching is clearly competing with other technologies. Is that why Tymnet decided to become a systems integrator?

Continued on page 41

Data View

IBM's view of EDI

Users of EDI Services link through Information Network



INFORMATION PROVIDED BY IBM
CW CHART

EDI gets users' OK

BY KATHY CHIN LEONG
and PATRICIA KEEFE
CW STAFF

SAN FRANCISCO — Electronic data interchange (EDI) is a sleeper technology and the antithesis of Integrated Services Digital Networks (ISDN), according to Thomas Nolle, a consultant and president of CIMI Corp.

Characterizing ISDN as a "product technology in search of interested users," Nolle claimed EDI is just the opposite. "Users are really interested and willing

Continued on page 42

Users look inward for net service

BY PATRICIA KEEFE
CW STAFF

LEXINGTON, Mass. — Finding network management that supports a range of systems and software is not the only issue frustrating users today. Those concerns extend to network maintenance and support — and who specifically should provide it.

Fortune 1,000 network and MIS managers who participated in two recent focus groups said they preferred to utilize in-house network support staff rather than contract with outside vendor services for maintaining their communications facilities.

However, many of these same users added that they would be glad to turn these responsibilities over to a third party, providing it could demonstrate reliable and professional network service support capabilities.

A long way to go

The results of the focus groups made it clear that these managers think vendors have a long way to go.

Two focus groups, sponsored in March by The Ledgeway Group, Inc., a research and con-

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Inside

Users file ONA grievances with FCC

BY MITCH BETTS
CW STAFF

Business network users groups, as part of their attack on the Open Network Architecture (ONA) plans of the regional Bell holding companies, have drawn up a list of complaints covering pricing, usage restrictions and the protection of confidential information.

Comments filed with the Federal Communications Commission April 18 showed that some groups — such as the Association of Data Communications Users and the International Communications Association (ICA) — opposed the ONA plans, mostly because they lack national uniformity and fail to unbundle local network services [CW, April 25].

Also, according to the association, the ONA plans offer very few features that are not already currently available.

In addition to those concerns, the users groups identified the following problems:

- Only Ameritech's plan has a strong commitment to cost-base pricing of ONA services. The other plans hinted that ONA prices will be what the market will bear.
- Many basic service elements are treated differently in each of the seven ONA plans, causing confusion.
- Bellsouth Corp. and Southwestern Bell Corp. plan to restrict the ONA services available to end users, as distinguished from enhanced service providers.
- The ONA plans do not adequately protect users' proprietary network information from disclosure or abuse.

BIT BLAST

EDI users get LU6.2

Spectrum Concepts, Inc. and Control Data Corp. (CDC) have inked a pact that reportedly will provide electronic data interchange users with access to Spectrum's Xcom 6.2 LU6.2-based data transmission software when they are connected to CDC's Rednet public data network. LU6.2 provides an alternative to traditional bisynchronous communications networks.

Xcom 6.2 can boost data throughput by compressing both character and binary data, a difficult feat in a bisynchronous environment, Spectrum said. LU6.2 allows software to be written independently of the computer and operating system.

GE Information Services, a division of General Electric Co., recently enhanced the All-In-1 Connector Software Package, software said to interface its Quick-Comm electronic mailbox service with Digital Equipment Corp.'s All-In-1 Mail system. Version 3.1 interfaces an additional DEC mail capability, VMS Mail, with Quick-Comm.

Electronic Data Systems Corp. (EDS) has agreed to purchase **M&SD Corp.** in Lyndhurst, N.J., a privately held telecommunications services supplier that also serves a consortium of 50 companies. Terms of the acquisition were not disclosed. M&SD will be organized as a division of EDS Communications Corp. EDS bought M&SD to get a crack at its customer base, which includes more than 200 Fortune 1,000 companies.

Octel Communications Corp. has announced that **Southwestern Bell Corp.** will be using several Octel Aspen Maxum voice processing systems for certain voice-messaging field market trials slated to begin this summer under the telephone company's recently filed Comparably Efficient Interconnection Plan. The trials involve limited voice mail and telephone answering services in selected wire centers within Southwestern Bell's five-state service area.

Fenn

FROM PAGE 39

We are not getting into systems integration [for that reason]. The competition between packet switching and other alternatives is not the main factor — maybe the third one. We are doing it in order to meet customer requirements. Packet switching doesn't serve all user needs.

Is there a new type of user being drawn to packet switching?

There are some things happening out there that are different now. I call them multicorporate users. Corporation A wants to talk to Corporation B, which wants to communicate with Corporation C. Packet switching clearly has advantages for that. Customers are also deciding they need to connect internal computer systems in a safe and efficient way. Merging two large [IBM Systems Network Architecture] networks is not a trivial thing to do. But we have had experience helping customers do that.

What are the differences between private network and public network users?

There is a wide spectrum between the two. The important reason for private is cost-related or control-related. They want to control it fully or absolutely minimize cost in highest traffic areas. People with public network solutions are targeting locations with lower density traffic, a wide geographic arena or third parties. The argument for these users is that they don't want to control the network and prefer to let the vendor deal with it.

Will these camps merge?

It is happening in almost every case. In places where we install private networks, we find growing use of the public Tymnet packet-switching network. We can offer a private network gateway into our public network.

Where is packet-switching technology headed?

[The technology is moving toward] building switches that are bigger and faster, [as well as] smaller and faster. As people have more traffic, the switches must get bigger and faster and be able to provide the performance required. At the same time, you must get switches smaller and faster to spread the technology to lower density locations. You must go in both directions. There is a third-direction functionality. We see the packet-switching arena expanding to pick up integrated protocol conversion and other functions. The cost will vary on traffic load.

How do you stay in touch with your users?

We survey them several times a year. We have multiple users groups: one in Europe, one in the U.S. focused on the public network and another in the U.S. concentrated on private network activities. I visited three customers my first month on the job. We encourage customers to visit us here in San Jose. Executive management participates in the visits. As a matter of priority, we are increasing the executive visibility with users beyond the simple sales calls.

Any comment on the recent Open Network Architecture (ONA) filings from the divested Bell operating companies?

We are very disappointed. There is a wide range in the quality of the filings, and we have a long way to go before key ONA issues are resolved to anyone's satisfaction. The filings put vendors like us at a disadvantage. It is not a surprise. Just think about the major communications users in the U.S. who will have to deal with all the differences in these filings.

Adrian

CONTINUED FROM PAGE 39

There is, however, one thorny problem with this scenario that OSI and the like do not solve — data exchange at the applications level that preserves content. It can be done, increasingly with very sophisticated extraction capabilities. The trouble is, the facilities for making intelligent use of that data are primitive.

It's not the software products themselves that are the problem, it's their data-capture functions. For most products, bringing in data is a chore for which you program an input routine, or translate the file at the sending end into an accepted exchange format (like the U.S. Navy's Data Interchange Format or Lotus Development's WKS, WK1 and so on, for spreadsheets or ASCII for text) and then retranslate it when it arrives at the other end.

In the process, a lot of semantics are lost and, more to the point, so is much of the valuable time and effort put in by creative people. You can't carry formatting information with text, or formulas with spreadsheets, and you may as well forget about the intelligent communication of graphics information. You could work with bit maps, but that requires a great deal of bandwidth. Moreover, structures based on graphics primitives, like the widely used meta files in the DOS world, don't translate from one architecture to the other easily, if at all.

So, a call to vendors: There is a critical mass, there are examples and there is the need for rich application-level information exchange. Call it "data interoperability," call it "platform transparency," but give it to us!

The critical mass results from one simple fact: Corporate America is buying Macintoshes. A lot of Macintoshes. And, as noted above, they are able to hook them up, in a variety of ways, with the DOS-based machines that are the staple desktop tool in business today. They can easily copy files back and forth.

Yet, to make use of those files, they often have to reduce the content to a stripped-down subset of the original document.

Examples of a better way? Start with Microsoft Word from Microsoft. A staple word processing package in both the Mac and IBM Personal Computer environments, it is one of the few products that offers support in each version for the other machine's format. If you can handle the physical access question (not trivial, because of differing disk standards, but solvable with networking), Mac Word can read Microsoft's MS-DOS Word files, and vice versa.

Clearly, it is time for vendors to provide, and promote, applications interoperability. More to the point, those who don't will be in danger of being left behind.

Adrian is editor of *NYPC* and *FOCUS Systems Journal*, and author of *The Workstation Data Link*, published by McGraw-Hill, Inc.

EDI users

CONTINUED FROM PAGE 39

to grapple with the technology."

He said the standard user response to ISDN has been, "I don't know what this is, I don't believe in it, and I don't need it." Conversely, Nolle, who attended the recent ANSI X12 EDI conference here, summed up the attitude of 1,100 attendees as "Despite the fact that I don't know what these people are talking about, I need this."

At least one user company, Burlington Northern, is so determined to enact an EDI system, that it rented a booth on the exhibit floor, solely for the purpose of promoting its ability to trade electronically, as though it were a service it was offering its business partners, Nolle said.

A hot two-pronged issue came out in a lot of the sessions: There are a series of technical issues that are attached to EDI that business and financial personnel are not equipped to deal with; and, there are a series of organizational and business issues that technical staff cannot handle.

This is important because unlike the implementation of some other technologies, designing a successful EDI system really has to be a joint venture between the technical and business sides of the house.

Conference attendees also got an update on ANSI X12. The completed portion of the X12 standard has been in use since 1983, when the first documents were approved for purchase ordering and invoicing. Since then, more than 14 documents have been approved, covering generic aspects of the supplier-customer business.

"Many people are not really aware that X12 is a body of standards, only parts of which have been completed," Nolle said. This fall, ANSI will make all 50 documents, including early drafts, available for review. Afterward, ANSI will vote.

Approximately 20 working drafts have yet to be approved for a variety of features, said Harriet Rusk, executive director of Data Interchange Standards Association, Inc.

Standards setting has created some level of polarization between users and vendors, Nolle said. Each industry has a council that pretty much controls the EDI standard for that market. These councils are reluctant to hand over their standard-making authority to ANSI because they believe the organization's review process for moving X12 forward takes too long, he said.

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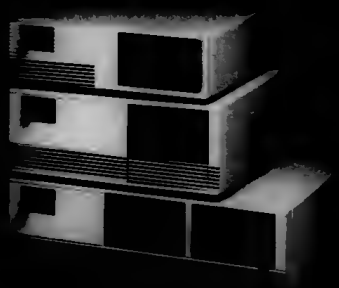

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TelOAS is more than a computer system. It's a new way of looking at solving your computer needs. TeleVideo engineers created a system that can be anything you need it to be. From a data entry terminal to a powerful CAD/CAM workstation to a LAN fileserver, TelOAS combines power and flexibility in a system every user can afford.

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TelOAS II	NH	286/12	1M	8	1.2M	Optional	Enh. AT	Optional	Optional	155W
TelOAS II	20	286/12	1M	8	1.2M	20M	Enh. AT	Optional	Optional	155W
TelOAS III	NH	386/16	1M	12	1.2M	Optional	Enh. AT	Optional	Optional	240W
TelOAS III	40	386/16	1M	12	1.2M	40M	Enh. AT	Optional	Optional	240W
TelOAS III	70	386/16	1M	12	1.2M	70M	Enh. AT	Optional	Optional	240W
TelOAS III/20	NH	386/20	1M	12	1.2M	Optional	Enh. AT	Optional	Optional	240W
TelOAS III/20	70	386/20	1M	12	1.2M	70M	Enh. AT	Optional	Optional	240W

TelOAS I. Flexibility Is The Heart Of The System.

The key to the new TelOAS Open Architecture Solutions is being able to build the computer that's right for your applications. Our modular design lets you choose the TelOAS CPU you want: an 8 MHz 8088, a 12 MHz 80286, or your choice of a 16 or 20 MHz 80386. Now choose the drives you want, the monitor, keyboard, and the footprint you want. Then combine them in the configuration that gives you the solution you need. When your needs change, the TelOAS system changes right along with you.

We didn't forget that even the most flexible system has to work in the real world, so we made sure the TelOAS system is compatible with industry-leading software to give you access to the most versatile and powerful programs.

TelOAS I packs a lot of power and versatility into a very compact 4" high package. Its open-architecture passive backplane design gives it great flexi-

bility. The passive backplane has four full slots (three 16-bit and one 8-bit) and room for two half-height drives. To make your connections, there's one serial and one parallel port.

To keep everything safe and sound from unauthorized use, there's a convenient front-mounted security lock with removable key.

There's also a LED On-Off power switch/reset key that falls right at hand. A small point, but an indication of the care TeleVideo engineers took designing our most advanced system ever.

The standard TeleOAS 1 configuration includes an 8088 CPU, 512K RAM, 360KB floppy disk drive, floppy disk controller, Hercules®/CGA graphics controller and 84-key AT compatible keyboard. It's shown here with the optional high-resolution 14" amber screen monitor.

TelOAS II. Advanced Technology Is The Brain Of The System.

The TelOAS Open Architecture Solutions use some of the most advanced design and assembly technologies to deliver computers that are as dependable as they are powerful.

TelOAS advanced passive backplane technology makes it easy to upgrade your system as your needs change. Increasing memory can be as easy as plugging in a new TelOAS Single Inline Memory Module (SIMM). Slip out your half-height drives, slip in full-height hard disks and you can have to up 300 MB storage capacity, enough to run sophisticated System Fault Tolerant backup systems and LAN configurations.

Our Surface Mount Technology (SMT) increases the functionality and reliability of TelOAS computers, and decreases their

power consumption.

And that's enough to make even a power user smile.

TelOAS II increases your flexibility with a choice of TelOAS 12 MHz 80286 or 16 MHz 80386 CPUs, plus a socket for an 80287 or 80387 coprocessor. The passive backplane has eight full slots (seven 16-bit and one 8-bit), and room for four half-height drives. There are two serial and one parallel port, a security lock with removable key, and a LED On-Off power switch/reset key.

The TelOAS II standard configuration includes a 12 MHz 80286 CPU, 1 MB RAM, 1.2 MB floppy disk drive, floppy and hard disk controllers, and 101-key Enhanced AT keyboard. We've shown it here with an optional 13" color monitor.

While TeleVideo's engineers were designing our most powerful and most flexible computer system ever, they made sure it was also the most reliable.

TelOAS Open Architecture Solutions use the most advanced design and production technologies to reduce the number of parts in each system, and to make sure each of those parts maintains our stringent quality control requirements.

To make sure our computers remain very reliable and trouble-free, each TelOAS system has complete diagnostic features that give you extensive hardware tests.

TelOAS III is the top of the line, perfect for users who expect a lot from their computers. Unique for TeleVideo, TelOAS III can be configured to support up to 600 MB, giving users the capability to run large disk storage programs, LAN configurations and System Fault Tolerant back-

TelOAS III. The Best Solutions Are The Most Reliable Solutions.

up systems, as well as powerful CAD/CAM engineering workstations.

TelOAS III accepts TelOAS 12 MHz 80286 and both 16 MHz and 20 MHz 80386 CPUs. There's a socket for a 32-bit memory expansion connector, and an 80387 coprocessor. The 20 MHz 80386 CPU also accepts a Weitek™ 1167 floating-point processor. The passive backplane has eight full-size and four half-size slots (ten 16-bit and two 8-bit), and room for two full-height and two half-height drives.

There are two serial and one parallel port, and a LED On-Off power switch/reset key.

The TelOAS III standard configuration includes a 16 MHz 80386 CPU, 1 MB RAM, 1.2 MB floppy disk drive, floppy and hard disk controllers, and 101-key Enhanced AT keyboard. It's shown here with an optional 19" high-resolution color monitor.

TeleVideo has the perfect terminals to go with our TelOAS Open Architecture Solutions.

The affordable 905 is a very reliable ASCII terminal with all the basic features you look for in a data-entry terminal, priced with maximum economy in mind.

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The powerful 965 is perfect for just about everything. With an Enhanced PC keyboard, it's a low-cost workstation for your TelOAS system running DOS. As an ASCII or ANSI terminal with the corresponding keyboard, you can use it on your TelOAS system in a UNIX® multi-user configuration.

The 965 uses an ultra-reliable single board design with a 16-bit

TeleVideo Terminals. The Perfect Additions To A TelOAS System.

CPU and sophisticated gate array to give you all the power you need. Its 14" high-resolution flat screen displays up to 49 data lines to show large spreadsheets or two pages of text at a time. That's more than any other terminal in its class. It also supports up to 23 terminal emulations, again more than anything in its class.

And the 9320 is a DEC® VT320™ compatible terminal with more flexibility and features than the VT320. It has DB25 and DECconnect™ host and printer ports, two pages of display memory, and an enhanced VT320 keyboard.

All TeleVideo terminals come complete with TeleVideo's full one-year limited end-user warranty.

Which is just one more reason why TeleVideo terminals are the perfect choice.

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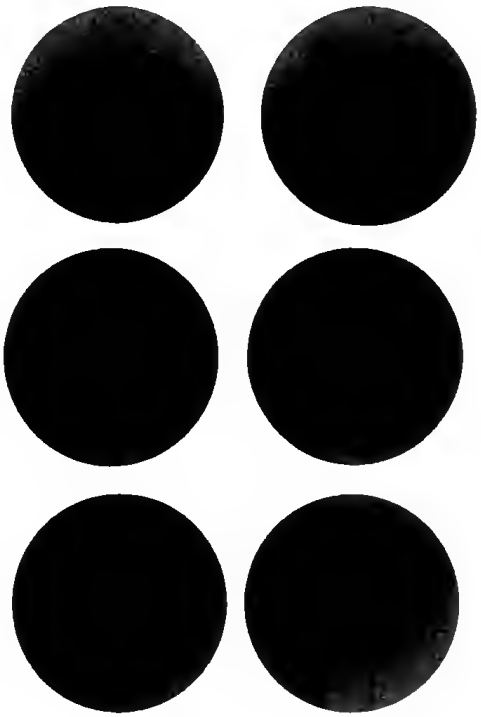
Congratulations to the winners and many thanks to all who entered. We'll see you again next year!

COMPUTERWORLD

An IDG Communications Publication

The Winning Slogans of the 1988 Computerworld Button Contest:



SEE US AT COMDEX - BOOTH #1214

Net service

FROM PAGE 39

sulting firm based in Lexington, were designed to examine the concerns of Fortune 1,000 firms. The results of those sessions are covered in a report titled, "Focus Groups with Users: Network/Communications Support."

The participants manage networks ranging from 25 to 3,000 nodes that support anywhere from 10 to 3,000 users. The majority said they have multiple local-area networks, adding that they felt the support issues facing them were the same on both the corporate and the departmental LANs.

The importance of network support is commiserate with the growth of networks themselves.

House staff fattened

This complexity has forced most of the participants to increase their in-house service and support staffs. And, the report notes, despite vendor claims to the contrary, the more sophisticated "intelligent" network management tools actually require better trained technicians to operate them and are not the cost-efficient systems they promise to be.

Because none of the new network management products address more than a specific vendor's segment of a user's network, the trend today is toward customer self-service, according to The Ledgeway Group. More than ever, users believe that in-house services will ensure greater network reliability and efficiency.

The managers cited a number of factors in support of in-house staffs. Perhaps among the most compelling is economics. "Because budgetary constraints continue to be network managers' greatest impediment to doing their jobs, in-house staff is perceived as a more cost-effective method of serving a company's network," the report said.

Just as important is the issue of multivendor integration. Other incentives include quick response to problems, familiarity with network requirements and the ability to design solutions to more fully meet applications needs.

Fear of outsiders

Many customers are hesitant to relinquish power over their networks to outside vendors, and for good reason, according to the managers who were interviewed.

Vendors lack reliable service and support organizations capable of responding quickly and thoroughly to user problems, the managers complained. They griped further that vendor service representatives tend to be unfamiliar with the customer's network applications and unable to deal with multivendor integration issues — a thorn in the side of many user systems today.

Among the recommendations offered by the focus group participants were that vendors must invest greater resources into their service and support functions, specifically the following:

- Work to better understand their customers' unique communications needs.
- Build a partnership with the customer by demonstrating this understanding and offering realistic solutions to meet their needs.
- Be proactive. Call on customers between emergencies to build a closer working relationship with the users.
- Sell and service two levels of the organization: the network manager and the senior staff. Educating senior staff about the real costs of networks will help the network manager justify the operating costs inherent in building and maintaining a network.
- Help users determine the true costs of maintaining the network, so they can decide whether using in-house staff or turning to an outside vendor makes economic sense.
- Make service and support more accessible. Many users are unaware of the service available to them. Still others believe that most service programs are geared toward ensuring rapid response.

Those who do so will see a return on investment in the form of loyal customers, add-on business and a willingness among customers to pay extra for premium service, the report said.

NEW PRODUCTS

Modems/ Multiplexers

A multiplexing controller designed to simplify wiring between remote terminal clusters and Digital Equipment Corp. VAX and Microvax systems has been introduced by **Telebyte Technology, Inc.**

Model 572 allows as many as eight terminals or printers to communicate with the CPU over a single twisted-pair cable. In addition, the terminal cluster can be located as far as 5,000 ft from the CPU.

The Model 572 supports eight full-duplex terminals operating simultaneously at up to 19.2K bit/sec. Each of the eight ports also includes a full-duplex handshake link.

The controller is packaged on a DEC dual-PC board that installs in the CPU. A system, consisting of the Model 572 with ribbon cable and a composite-link cable bracket, costs $395.

Telebyte Technology, 270 E. Pulaski Road, Greenlawn, N.Y. 11740. 516-423-3232.

Raycom Systems, Inc. has added the **RS-422 Asynchronous I/O Module** to its 5100 series fiber-optic multiplexer product line.

Each RS-422 module provides 16 full-duplex channels, handles data rates to 19.2K bit/sec. and is configured with 16 sub-mini DB-25 connectors. The modules can be used with computer systems such as the Hewlett-Packard Co. HP 3000 and the IBM Series/1.

The RS-422 I/O Module costs $1,600.

Raycom Systems, 6395 Gunpark Drive, Boulder, Colo. 80301. 303-530-1620.

Diagnostic equipment

Verilink Corp. has unveiled an extended superframe channel service unit that features modem support, which allows the unit to automatically report alarm conditions to a remote network control center.

The **551VST L2** can report locally to a personal computer running Verilink's Verinet 2 transmission management software or to a Verilink extended superframe diagnostic system. Using an external 1,200 bit/sec. modem, it can report directly to Verinet 2.

The unit costs $3,250.

Verilink, 145 Baytech Drive, San Jose, Calif. 95134. 408-945-1199.

A mid-range protocol tester that supports color displays has been announced by **Atlantic Research Corp.**

The **Interview 6600** protocol tester can be used to monitor and emulate protocols for troubleshooting circuits at speeds up to 72K bit/sec. Features include an upgrade path to other Interview models, bar charts displaying critical relationships between events and IBM Color Graphics Adapter compatibility.

The Interview 6600 protocol tester costs $9,995.

Atlantic Research, 5390 Cherokee Ave., Alexandria, Va. 22312. 703-642-4000.

Cabling

A miniature Ethernet expander that provides an extended twisted-pair interconnection between the transceivers and controllers of any Ethernet local-area network has been introduced by **RAD Data Communications, Inc.**

The **LE-6** replaces AUI cable with two shielded twisted pairs, allowing Ethernet V1.0, V2.0 and IEEE 802.3 to run on a universal cabling system such as IBM's. Features include 10M bit/sec. transmission, SQE testing, AC/DC coupling, back-to-back frames and signal compatibility with all Ethernet standards.

The LE-6 extends the distance of data transmission between the controller and transceiver up to 820 ft.

A pair costs $445.

RAD Data Communications, 151 W. Passaic St., Rochelle Park, N.J. 07662. 201-587-8822.

Even if Bill's ditch digger doesn't get you, lightning will. Or ice storms. Or squirrels.

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SYSTEMS & PERIPHERALS

HARD TALK

Efrem Mallach

Chip's proof is in the pudding

A tremendous amount of attention has been focused recently on the poor performance of Sun Microsystems' Sun-4 reduced instruction set computing (RISC)-based workstation on the Neal Nelson & Associates commercial benchmark set. It's time to set the record straight.

Based on those benchmarks, *Computerworld* Senior Editor Stanley Gibson's recent column [CW, April 11] declared: "A bucket of cold water was dumped on a hyperventilating group of RISC enthusiasts." The results of these tests have been used to proclaim the unsuitability of the Sun-4 for commercial data processing (a correct conclusion), the unsuitability of the Sun Scalable Processor Architecture (Sparc) chip for commercial DP (not a reasonable conclusion from the results) and the unsuitability of RISC in general for commercial DP (totally absurd).

Suppose I wanted to design a boat with a newfangled diesel engine. I call up the diesel engine folks. They tell me they don't have any diesels in boats right now, but there's one on a dump truck a few miles up the coast that I am welcome to look at. I put the engine to my standard boat test and drive the dump truck off the end of the pier. It sinks like a rock. Conclusion: Diesel engines are no

Continued on page 48

'Unix University' relies on MVS

University of California at Berkeley, home of Unix version, is IBM shop

BY J. A. SAVAGE
CW STAFF

OAKLAND, Calif. — Despite a "great flurry of discussion" about the role of Unix in data processing for the nine-campus University of California at Berkeley, the institution's operating system remains IBM's MVS.

Unix "is not as sophisticated as MVS," said Jim Dolgonas, director of information and computer systems for the university. The University of California at Berkeley's Unix 4.2 "was developed because certain features were unavailable in AT&T's Unix. Now Unix has many of those features. But using [the operating system] is not like having vendor support.

"The IBM MVS environment is best suited for administrative computing — a high volume of reliable, secure processing needs," Dolgonas added.

Dolgonas's shop runs both MVS/XA and MVS/SP as well as VM/CMS. His shop also runs two Digital Equipment Corp. Microvaxes on VMS and Ultrix for communication protocol conversion.

A big adventure

While Dolgonas observes academic systems in each campus, his charge is to run all of their administrative processing along with that of the university's regents office. Additionally, he presides over one of 13 major computer centers for the university system. The centers are hooked up with what Dolgonas calls "a big SNA [IBM Systems Network Architecture] network."

His 1½-year-old IBM 3090 Model 180 mainframe batch processes payrolls for the university's 100,000 employees. In addition, the mainframe handles online transaction registration of the university's 130,000 students — who add and drop classes faster than you can say "surf's up." Other tasks include general ledger accounting, facilities management, keeping track of contracts and grants and personnel information.

Last month, the data center was moved from a small building next to the Berkeley campus, to a roomier area in neighboring Oakland. In Berkeley, Dolgonas had two rooms with a total of about 4,000 square feet packed with equipment. He now has room to stretch into a computer center three times that size.

He said the move went smoothly with "great cooperation from the vendors and suppliers." As many as six IBM support personnel were on hand to assist with the location change.

While the need for computing ability is constantly growing, the larger room and the shrinking

Continued on page 49

Masscomp revs up processors

BY STANLEY GIBSON
CW STAFF

BOSTON — Cutting response time to less than 1 msec in some applications, Massachusetts Computer Corp. (Masscomp) recently replaced its product line with four systems based on the Motorola, Inc. 68030 microprocessor.

The systems, like previous Masscomp processors, are intended to perform real-time acquisition, analysis and display of data. Masscomp computers are typically used in testing automobile, airplane and rocket engines; medical imaging; speech translation; and process control.

Masscomp said the submillisecond response time, which it claimed is a first for a Unix-based

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Data View

IBM mainframe users move to 3090

Plan to purchase an increasing number of high-end machines

INFORMATION PROVIDED BY FOCUS RESEARCH SYSTEMS, INC.
CW CHART

Prime's 386-based EXLs pack 4 to 5 MIPS punch

BY NELL MARGOLIS
CW STAFF

NATICK, Mass. — Further straining the line between personal computers and minicomputers, Prime Computer, Inc. is planning a June shipment for two higher powered variants of its EXL 316 multiuser supermicrocomputer, which is based on the Intel Corp. 80386 microprocessor.

Like the EXL 316, the new EXL 320 and EXL 325 were built around Intel's 80386 chip and run in Unix, Microsoft Corp.'s MS-DOS and Pick Systems' Pick environments. Both, however, pack a greater wallop than the 3.2 million instructions

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Inside

Mallach

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good for boats. Absurd? Of course: It's absurd because what I was testing — floatation — is unrelated to the engine. The dump truck sank because it was a dump truck, not because it had a diesel engine.

Distant relatives

Yet those who criticize RISC architecture or the Sparc chip on the basis of the Nelson benchmark results are falling into the same trap. The processor of a computer is like the engine of a boat or a dump truck. The benchmark tested primarily I/O capacity, not processing power, and the two are nearly unrelated.

What determines I/O capacity? The list begins with the design of the operating system and how it balances responsiveness with throughput, flexibility with optimization for a particular environment and ease of use with performance. It continues with the coding of device drivers and the sophistication of their access optimization algorithms.

I/O is further affected by the buses that connect the processor, the memory and the I/O subsystems. It includes the device controllers and their ability to operate independently of the processor and to overlap data transfers with other activities. Processor performance is down the list in about 12th place, just ahead of the phase of the moon and the color of paint on the computer room walls.

The logic content of channels, controllers, multiplexers and their cousins in a typical mainframe far exceeds that of the central processor. That's one reason why mainframes score poorly in "price per MIPS." Channels don't add millions of instructions per second, or MIPS. They just add throughput. What so-called experts sometimes forget is that users don't need MIPS, they need throughput.

A workstation like the Sun-4 was designed for a different environment. It was designed for users who perform enormous amounts of computing on relatively small quantities of data. Spending money on faster data transfer would be a poor decision on Sun's part. Sun knows what its customers need and has historically done a good job of providing it.

The Nelson benchmarks, then, test things that have little or nothing to do with the processor used in a system. When Gibson wrote, "It may be too early to tell if the test was a fair one for Sun's Sparc chip," he was missing the point. The test was neither fair nor unfair to the Sparc chip. It did not test the Sparc chip. The best reaction to it, in regards to Sparc's suitability for commercial applications, is a yawn.

This is not to criticize the Nelson folks. They knew what they were doing. They took a dump truck to see if it could float. It did, after a fashion. The problem is with the landlubbers who watched it from the dock and expected something magical to happen. There is no magic. To see if diesel engines are good in boats — they are, by the way — we have to put one in a boat. To see if the Sparc chip is good in commercial systems — and it might be — we have to put one in a commercial system. Until somebody does that, any statement is, at best, a guess.

Mallach teaches at the Boston College School of Management and is a consultant to user and vendor executives.

Low-priced RISC workstation bows

BY J. A. SAVAGE
CW STAFF

MOUNTAIN VIEW, Calif. — Hoping to reach a larger number of users, Silicon Graphics, Inc. recently announced a reduced instruction set computing (RISC), three-dimensional graphics workstation priced less than $50,000.

Silicon Graphics introduced the Iris 4D/50 Model for $49,500 as a precursor to a $15,000 entry-level graphics computer that the company said will be announced at the end of this year. The 4D/50 replaces the year-old $64,900 Iris 4D/60. The next most powerful model in Silicon Graphics' line, the 4D/70, also costs $64,900.

The 4D/50 is based on an 8-MHz RISC processor made by Sunnyvale, Calif.-based Mips Computer Systems, Inc. The CPU delivers 7 million instructions per second, according to Silicon Graphics. The firm's other systems are based on Motorola, Inc.'s 68000 series chips.

"Silicon Graphics wants to get a bigger piece of the market pie and do what Sun [Microsystems, Inc.] did by getting into the mass market," said Vicki Brown, a workstation analyst at International Data Corp. in Framingham, Mass.

"The risk is they are getting into the mass market too late," Brown said, adding that Silicon Graphics will have a good chance of success against better established low-end competitors because the company's products offer superior performance.

Silicon Graphics' move to offer less expensive systems follows earlier statements that the company would offer high-end systems to compete with the graphics superworkstations of Stellar Computer, Inc. and Ardent Computer Corp.

The Iris 4D/50 basic configuration includes 8M bytes of main memory, an eight-bit color plane, a 170M-byte disk drive, Ethernet, a keyboard, a mouse and a 19-in. color monitor. The machine can be upgraded to a 4D/70 CPU for $15,000, according to the company.

University

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footprint of the machines may make this the system's final move. "Over time, we won't ever need to expand the computer room," Dolgonas said, crossing his fingers.

Shrinking direct-access storage devices (DASD) offered Dolgonas an immediate gain in floor space. With the new building came 10 IBM 3380 Model J DASDs.

These replaced "a sea" of Control Data Corp. 3350s, "with a tremendous savings in floor space," Dolgonas said.

On the microcomputing front, Dolgonas is cheering the proliferation of desktop terminals, but only if they are dumb terminals, IBM Personal Computers or IBM PC clones.

He estimates there are 700 to 800 terminals for the statewide, 100,000-person staff, including everyone from maintenance workers to analysts. Dolgonas estimates that half of those terminals are personal computers used primarily by analysts.

IBM PCs preferred

"We encourage users to get PCs [IBM PCs or clones] rather than Apple Macintoshes. We set up training and give them advice," Dolgonas said.

Now that the move is over and the dust is settling, Dolgonas has embarked on a dozen new projects, including putting the university's retirement system information on a data base so that pension information will no longer be calculated by hand and entering the personnel policies of the 20 unions that work at the university on a data base.

"We let the users decide what projects we're going to work on, and they ask us for recommendations as to the timeliness or sequence of the projects," Dolgonas said.

The projects are then sent to a steering committee with representatives from the university president's office, treasury and legal departments.

"Right now, all our enhancements are oriented toward two goals: on-line transactions and the ability to interface," Dolgonas said.

Tandem offers printer family

BY J. A. SAVAGE
CW STAFF

CUPERTINO, Calif. — Tandem Computers, Inc. recently unveiled a low-end, 14,000 page a month dot matrix printer aimed for distributed applications on the shop floor or in the office.

In addition to sharing a control language with other Tandem peripherals allowing users to run applications for any printer in the Tandem family, the 5512 printer has a paper tractor that the vendor claims can reduce waste by advancing paper or invoices automatically.

The printer is for use with Tandem's Nonstop on-line transaction processing (OLTP) computers using Tandem's Guardian 90 operating system or with its LXN OLTP computers using a Unix operating system. It can be connected to a host computer and can run in a local-area network, according to Rich Ghiossi, printer product manager at Tandem.

The 5512 prints 160 char./sec. in letter quality mode and 400 char./sec. in draft mode. The high-speed draft rate is 480 char./sec.

The printer's graphics resolution is up to 360 by 360 dot/in. It offers two fonts, Gothic and Courier, and costs $3,495.

The three other printers in the same Tandem line range from the 5515 model, which can perform 50,000 pages a month at a price of $6,450, to the 5518, capable of 350,000 pages a month and priced at $32,000. In between those models, the 5516 handles 100,000 pages a month at a price of $11,950.

The 5512 has two paper handling modes, a continuous form load and unload, which performs automatic paper alignment, and a demand-document feature that allows a page to be removed without advancing an additional form. According to Ghiossi, the feature is not available on Tandem's other printers.

Three interfaces are supported by the printer: RS-232C, current loop and a Centronics Data Computer Corp. parallel interface.

Masscomp

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real-time system, spans the receipt of an external interrupt through the execution of a high-level user process.

The new models, dubbed the MC6300, MC6400, MC6600 and MC6700, come in configurations ranging from a seven-slot pedestal to a 30-slot cabinet. The systems run Masscomp's real-time Unix operating system, RTU.

The MC6300 is a seven-slot pedestal system, configured with one or two 25-MHz 68030 microprocessors that share a 64K-byte direct-mapped physical cache. The system is available with one or two Motorola 68882 floating-point coprocessors and one or two Masscomp Super Lightning floating-point accelerators.

The system also comes with 8M bytes of parity memory, a small computer systems interface (SCSI), an Ethernet controller and four RS-232C serial communications ports.

The system features add-on error-checking and correcting memory to support up to 120M bytes of system memory, a 14 million floating-point operations per second (MFLOPS) vector accelerator, one or two graphics subsystems and Masscomp's STD+ Bus data-acquisition system.

Storage subsystems include a 150M-byte cartridge tape, a ½-in. reel tape drive and two enhanced small device interface disk drives, each of which has 318M bytes of capacity. MC6300 pricing begins at $24,900.

The MC6400 system comes in a rack-mount configuration with six slots. Like the MC6300, it also supports two CPUs with shared cache and has two floating-point coprocessors, two optional floating-point coprocessors, parity memory, an SCSI interface, an Ethernet controller and serial communications ports, all on a single board. Prices for the MC6400 start at $28,900.

Available either in pedestal or rack-mount configurations, the MC6600 offers 15 slots and can contain up to three 68030-based CPUs. The system supports one 14-MFLOPS vector accelerator per CPU.

Up to 120M bytes of error-checking and correcting system memory is available for the MC6600 in 8M- and 16M-byte increments. The system reportedly can support up to 568M bytes of disk, cartridge or reel tape. Prices for the MC6600 range from $42,500 to $77,900.

The high-end member of the family, the MC6700, is packaged in a 30-slot enclosure and can contain up to five 68030-based CPUs, each with 64K bytes of cache, a 68882 floating-point coprocessor and an optional Super Lightning floating-point accelerator.

The MC6700 performs up to 56 MFLOPS using four vector accelerators and supports up to four Intel Corp. Multibus I/O subsystems, two VMEbus I/O subsystems and two STD+ Bus data acquisition subsystems. Pricing ranges from $59,000 to $120,000.

The Super Lightning floating-point accelerator is a very large-scale integration chip set consisting of a proprietary floating-point interconnect chip and a Weitek Corp. 3164 computational chip.

Integrated on the Masscomp 6000 family of CPU boards, the chip set performs more than 7 Whetstone MIPS, according to the vendor. The chip set is priced at $3,000.

All models in the MC6000 series will be available in 60 days, except the MC6400, which will be available this fall.

Prime's EXLs

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per second (MIPS) performance of the EXL 316, according to Prime.

The EXL 320, using the 20-MHz 80386 chip, will deliver 4 MIPS to as many as 48 users working on typical Unix applications, a Prime spokesman said.

The 5-MIPS EXL 325 relies on a 25-MHz Intel Corp. chip to better the EXL 316's performance by 56%, according to the company.

"Prime's latest EXL models are right in line with an industry trend to keep pushing the performance of 386-based platforms while keeping prices at a personal point," said Bruce Jenkins, vice-president of Daratech, Inc., a market research firm in Cambridge, Mass.

EXL 320 pricing starts at $25,900, with maintenance from $137 a month; the EXL 325 is priced from $45,900, with maintenance from $174 a month.

The move, Jenkins said, is a smart one on Prime's part. "As soon as there's adequate hardware performance to run an application, someone's going to move that application to the machine in question," he said. "PC users tend to be less finicky about the technical fine points of how the power got into the box. PC CAD [computer-aided design] users will just want to know, can the box do the job?"

In addition to the new EXL models, Prime announced software based on IBM's Systems Network Architecture (SNA) that provides communication links between the EXL series and IBM systems using IBM 3270 applications. The software is available immediately.

The EXL family can also communicate with Prime 50 series minicomputers, IBM Personal Computers and compatibles and other third-party systems across Ethernet cabling running Transmission Control Protocol/Internet Protocol software, SNA and Prime proprietary communications tools.

NEW PRODUCTS

Processors

A family of real-time image processing boards for use with its Series 150/151 product line has been announced by **Imaging Technology, Inc.**

The **RTMP-150/151** real-time modular processor consists of a motherboard with up to three position-independent plug-on computational modules. According to the vendor, each module performs an image processing function that previously required up to three boards to perform. The processor is compatible with the Series 150 family of Motorola, Inc. VMEbus boards and the Series 151 image processor.

Four computation modules are available for performing real-time operations, binary correlations, rank value filtering and look-up tables.

The RTMP-150/151 real-time modular processor costs $995. The computational modules cost from 1,295 to $5,495.

Imaging Technology, 600 W. Cummings Park, Woburn, Mass. 01801. 617-938-8444.

An integrated vector/scalar processor for its I/O Computer has been announced by **Aptec Computer Systems, Inc.**

The I/O Computer feeds data to array processors and other high-speed devices at data rates up to 12M byte/sec. The VSP-1 processor plugs directly into the I/O Computer's internal bus, performing signal-processing algorithms.

The VSP-1 contains a scalar processor and a 20 million floating point operations per second vector processor, both of which share 1M byte of static memory on an 80M byte/sec. bus.

A single VSP-1 costs $24,900. An IOC/VSP-1 system, including an I/O Computer-24, a VSP-1, 16M bytes of memory and development tools, costs $99,500.

Aptec Computer, 9605 S.W. Nimbus Ave., Beaverton, Ore. 97005. 503-626-9000.

Graphics systems

An electronic slide presentation system said to allow users to create and display images in true-color on a large-format or red-green-blue monitor has been announced by **Autographix, Inc.** and **Compugraphic Corp.**

The **Electronic Slide Presenter**, or ESP, offers 680- and 1,024-line resolution capabilities and a 16-million-color palette. A pop-up picture directory lets users preview the presentation by showing nine thumbnail images at a single view. Other features include a screenwriter and a remote-control device.

The hardware components include an Intel Corp. 80286-based computer, a menu-display monitor and a graphics controller.

ESP is priced at $19,900 for a typically configured system.

Autographix, P.O. Box 9031, Waltham, Mass. 02154. 617-890-8558.

Printers/Plotters

Office Automation Systems, Inc. has updated its line of laser printers and controllers.

The **Laserpro Express** now comes standard with 512K bytes of random-access memory and six emulations, including Epson America, Inc.'s FX-80, IBM's Proprinter, NEC Corp.'s Spinwriter and Qume Corp.'s Sprint. It costs $1,995.

The **Laserpro Series II Express** now comes with 1M byte of RAM and includes Hewlett-Packard Co. Laserjet Plus emulation in addition to the emulations of the Laserpro Express. It is priced at $2,495.

Office Automation Systems, 9940 Barnes Canyon Road, San Diego, Calif. 92121. 619-452-9400.

Qume Corp. has reduced the prices on its **Qume Scripten** and **Qume Laserten Plus** laser pritners.

The Scripten, featuring Adobe Systems, Inc. Postscript compatibility, desktop publishing capabilities and a resolution of 300 dot/in., has been reduced to $4,995. Additional features include 3M bytes of memory, 11 type families and 35 resident fonts.

The Laserten Plus includes an interface module said to provide compatibility with most computers, word processing applications and word processing systems. It offers resolution from 75 to 300 dot/in. It now costs $2,795.

Qume, 500 Yosemite Drive, Milpitas, Calif. 95035. 408-942-4000.

Auxiliary equipment

AST Research, Inc. recently introduced the **AST 5250 Splice Box**, which it said allows IBM System/34, 36 and 38 users to substitute twisted-pair for twinaxial cable.

By using the twinaxial ports or RJ11 ports on each side of the splice box and cabling through, up to seven devices can be accommodated. The splice boxes reportedly will be included in all AST 5251/11 product packaging, the AST 5250 workstation and the AST 5250 personal computer.

The AST 5250 Splice Box will be available to end users as a separate product at a cost of $100.

AST Research, 2121 Alton Ave., Irvine, Calif., 92714. 714-651-8489.

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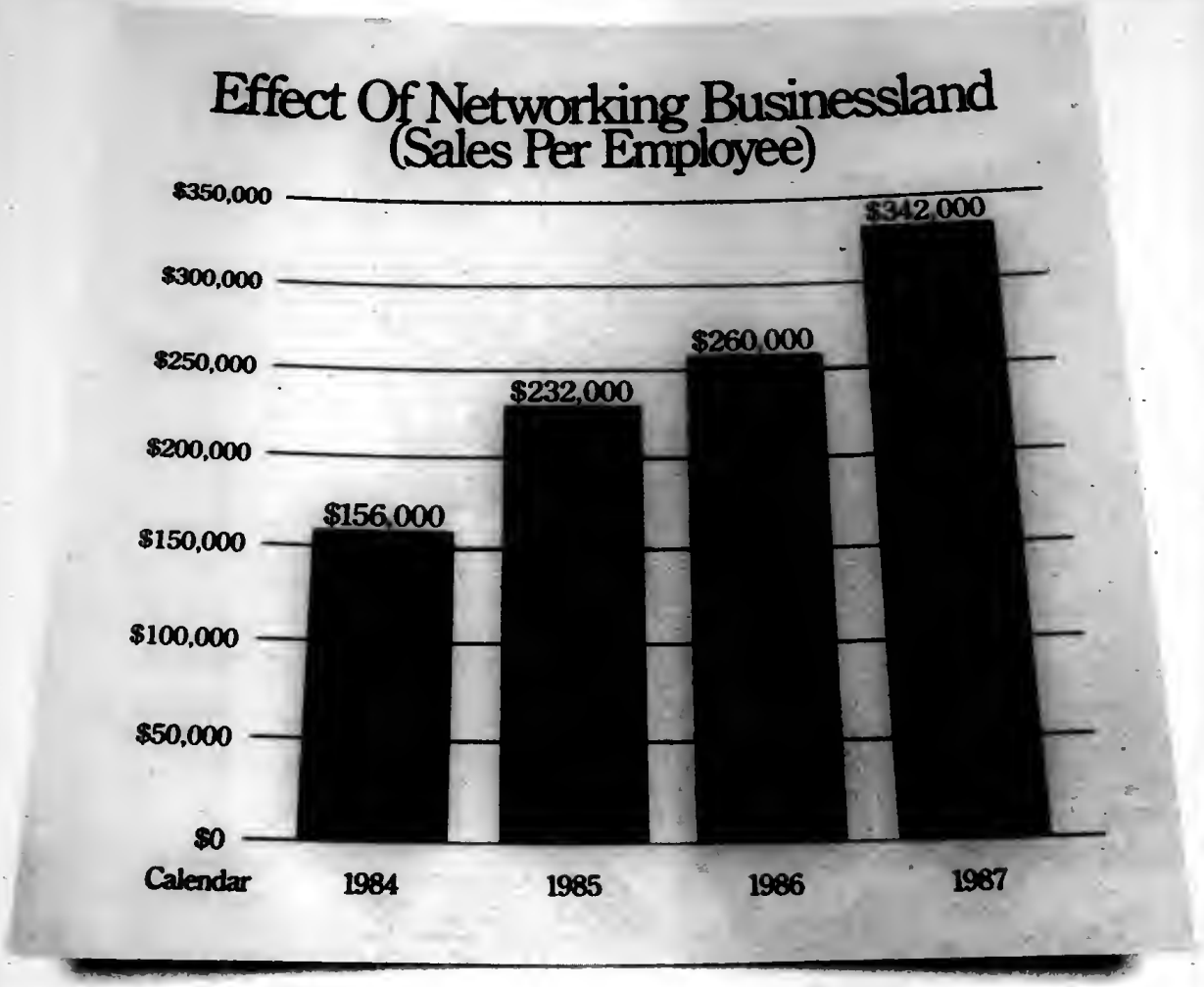


Users say EDI cuts inventory costs, speeds product delivery

BY LAWRENCE STEVENS

BRAD HAMANN

Rick Wakeland discovered electronic data interchange (EDI) in 1985 while he was trying to invent it.

"We didn't know anything about standards or EDI vendors," says Wakeland, manager of purchasing operations at PMI Food Equipment Group, a Troy, Ohio-based large manufacturer of equipment for the food industry. "All we knew was that it was strange that we would generate a purchase order using our software, print it and mail it to our supplier, who would then have to enter it into his computer."

While trying to plan his own communications system, Wakeland was tipped off to EDI standards and the EDI third-party market by one of his suppliers, Joseph T. Ryerson & Son, Inc. in Chicago, a steel distributor that had used EDI to facilitate sales to Ford Motor Co. and General Motors Corp.

Using Tracs, EDI software from Sterling Software, Inc. formatted to the ANSI X12 standard, PMI and Ryerson developed a pilot project in which 200 to 300 purchase orders were transmitted per month.

"We figured that preparing and sending a paper purchase order cost us about $25," Wakeland says. "With EDI, it costs about $5." The savings on that pilot project came to more than $60,000 annually.

Today, PMI, one of Premark International, Inc.'s four product groups, uses EDI to transmit 18,000 purchase orders annually to 13 suppliers. Even though that number represents only 15% of the company's total purchase order volume, Wakeland estimates that his firm is saving more than $360,000 a year.

EDI saves money and time by enabling purchase orders, invoices, bills of lading and the like to be electronically transmitted. It eliminates the printing and handling of paper at one end and the inputting of data at the other.

First implemented more than a decade ago by the trucking industry, EDI was eventually picked up as an efficiency measure by vertical markets, such as the automotive, textile and apparel industries, under pressure from foreign competition.

But today, no market is unaffected by it. Victor Wheatman, manager of EDI planning and services at Mountain View, Calif.-based Input, a market research and management consulting firm, estimates that 1987 EDI revenue reached between $70 million and $90 million. And, he says, he sees an average annual growth of 88% until 1992 (see chart page 54).

Electronic stuff

The most obvious and measurable advantage of EDI is that it saves money. "It's a very expensive to hire people to do the redundant input that telephone and letter communications require," says George Klima, director of accounting systems and procedures at Super Valu Stores, Inc., a Minneapolis food wholesaler. Klima estimates that in invoicing alone, eliminating matching invoices and remittances and other clerical functions saves his company more than $600,000 annually.

Many companies find they are saving money not only by cutting staff but also by being able to better organize the workday. Jim Bridges, vice-president of MIS at United Refrigerated Services, Inc. in Atlanta, says he finds that receiving invoices and purchase orders in real-time eliminates the peaks and valleys that result from companies sending documents daily or weekly.

"With EDI, we don't have the

Stevens is a free-lance writer based in Springfield, Mass.

INSIDE

EDI

FROM PRECEDING PAGE

panic afternoons when the mail room drops a ton of release orders on us at four o'clock and suddenly everyone is working time and a half," Bridges says, "We get orders in all day, and we can pace ourselves."

Staying efficient

Many users point to EDI advantages that are not directly related to postage and handling of paper documents.

For example, what Bridges says he likes most about EDI is that it cuts down on the inevitable errors that occur when data is entered and printed out so many times. United Refrigerated is a public warehouse for the grocery industry. It receives more than 1,000 release orders a day to ship products to outlets throughout the country. That leaves a lot of room for error, and, as Bridges says, "when we make a mistake, we pay freight both ways: We have to restock the product, but most importantly, we lose some goodwill."

While Bridges does not have an exact figure on how less often errors occur now that his company uses EDI, he says that the 850 release orders his firm receives electronically each day are processed practically error-free.

When used for transmitting price lists and promotional announcements, EDI can also better organize the buying process. "When we had to depend on salespeople to deliver price lists and promotional announcements," says Dave Toebbe, systems specialist at The Kroger Co. in Cincinnati, "we were never sure of getting current information. We would miss some promotions because a salesperson couldn't get in on time."

The ability to immediately receive and act on purchase orders and invoices provides a level of service that non-EDI users will be unable to compete with.

PMI's Wakeland

Bruce Bennett, data processing manager at Eber International, an apparel company in San Francisco, says that when his company first tested EDI with Mervin Kurtzman, Inc., a Los Angeles men's clothing store, 10 months ago, he knew it would be quicker than regular mail, but he was surprised at how much quicker.

Eber's first EDI transmissions were done in tandem with paper. "It was a week after I received my first EDI purchase order that I saw the paper version of that order," Bennett recounts. "The customer may have received the shipment before then. Suddenly, our level of service to Mervin's increased significantly."

Real-time transmission of purchase orders also allows companies to lower their inventories, since they will be able to replace stock more quickly. Gary Sweetapple, senior director of corporate system development at K Mart Corp. in Troy, Mich., says that now that his company is handling 80% of its general merchandise orders through EDI, he is able to delay ordering most stock by three to four days.

"When you multiply three days by our entire stock, the cost savings in interest is substantial," Sweetapple says.

Hourly inventory

Lowering inventory by three or four days is an impressive savings for retailers, but manufacturers plagued by tough foreign competition often have to do even better. Each of the big three U.S. auto makers has instituted some form of just-in-time (JIT) inventory, which requires, in some cases, only an hour's supply. According to Charles Richards, system development supervisor of the purchasing and supply staff at Ford in Dearborn, Mich., JIT is impossible without EDI.

"We have to schedule our assembly plants and docks hour by hour," he points out. "You can't do that with paper, since its timing is too inexact. You never know when the paper will arrive." Ford uses EDI to send purchase orders and receive information as to when parts will arrive, both for production and nonproduction items such as machine parts.

While JIT is considered the leading edge in plant organization, Richards says he sees EDI as a technology whose ramifications have not yet been fully explored.

He says he feels that once the age of paperless business transactions is reached, industries will be able to explore efficiencies and techniques of which JIT will be only one example.

"I compare EDI to a superhighway system," Richards explains. "By itself, it has little meaning. But it has made a lot of things possible. I expect that in the future, we will depend on EDI as much as we depend on our highway system today."

Electronic funds transfer

Many experts say that aside from JIT, the most revolutionary change EDI will bring in the near future will be cash management. Some companies are already taking into account the more exact knowledge of when cash will arrive and the quicker and more accurate collection procedures afforded by EDI.

Better cash management has

Continued on page 56

Exponential U.S. EDI market growth

A $1.9 billion market by 1992[1]

[1] Including network and processing services, software and professional services

[2] Various factors will contribute to EDI's growth at different times, including the introduction of inter-computer and standards, large companies requiring suppliers to use EDI, lowering of communications costs and the need to cut costs in general

INFORMATION PROVIDED BY INPUT
CW CHART

IBM: Late to the beach but a pretty big splash

BY PATRICIA KEEFE

IBM has caught the fever, if not the wave, of electronic data interchange (EDI). This is one surfin' safari the computer giant appears determined to lead, even at the cost of supporting open systems.

Under the sunny skies of Tampa, Fla., in the midst of a small office park beats the heart of IBM's EDI commitment — its worldwide, value-added Information Network.

In the U.S., the Information Network ties together 20 primary-node cities, 226 dial-in locations and three operations centers. International support is extended to 16 countries via IBM's Systems Network Architecture (SNA) and another 36 via CCITT X.25.

This modern operations center is the most overt example of IBM's newly charged commitment to EDI. More subtle is the computing giant's embrace of the interorganizational system concept, defined as any network or networks shared by two or more companies.

Putting teeth in IBM's commitment is the recognition that "we have to support the business patterns of our customers — regardless of equipment type," says Michael Ribet, the Information Network's manager of interorganizational systems/EDI marketing. He notes it would be unrealistic to expect users of IBM's EDI Services to communicate with only those trading partners that use IBM systems.

Given the wisdom of the adage, "Whoever owns the network controls the account," it is not hard to see why IBM views control of the interorganizational system as paramount. Such a system clearly increases the potential number of accounts to be won. And EDI is perhaps the most prominent example of an interorganizational system.

"By the end of the century, doing business without EDI may well be like trying to do business today without a telephone," IBM marketing literature optimistically predicts.

Advantages of the newcomer

Nevertheless, IBM's zest for EDI is relatively new. Launched in 1979, the SNA-based Information Network was initially targeted at IBM's 2,000 largest suppliers — 80% of its production — and 37 plants worldwide, including the Communications Products Division.

Announced in 1985, EDI Services, an offering under Information Network, came relatively late to the commercial market, claims Eric Arnum, editor of "EMMS," a New Canaan, Conn.-based newsletter that covers the electronic mail industry.

Such foot-dragging has effectively shut IBM out of some markets that have already standardized on one system, Arnum adds. For example, Sterling Software, Inc. can claim the lion's share of the pharmaceutical EDI segment.

Not too shy

Yet IBM is no EDI wallflower. It boasts a competitive toehold in the insurance market as the value-added network provider at the hub of the Insurance Value-Added Network Services consortium's EDI system. IBM's customer list also includes Texas Instruments, Inc., Pennzoil Co., Marshall Industries and San Francisco's Federal Home Loan Bank.

And lagging behind leading EDI innovators, such as the automobile, grocery and airline industries, are scores of other businesses waiting to be plundered.

"IBM obviously has an enormous advantage over any other company on the planet when it comes to computer, semiconductor and office equipment and telecom gear suppliers," Arnum says, noting that these industries have been surprisingly slow to implement EDI.

Moreover, there is something to be said for arriving fashionably late in a new market — IBM's standard modus operandi. In this case, the company's tardiness has allowed it to wait out the standards controversy.

IBM's EDI strategy breaks down in the following ways:

- Develop specific industry interorganizational system solutions and alliances to increase marketplace participation and develop significant presence in key industries. One example of this is IBM's connection with The Corporate Alliance, an association of companies that provides goods and services to hospitals.
- Capitalize on host attachment strengths and E-mail to drive EDI.
- Elevate interorganizational system awareness.
- Facilitate electronic handshaking within 24 hours of initiation.

EDI Services reportedly enables computers to transmit formatted messages into an E-mail box attached to Information Network for retrieval by authorized recipients. Users maintain a single connection to Information Network, regardless of the number of trading partners. This saves the expense and support associated with multiple point-to-point connections, IBM claims. •

Keefe is a *Computerworld* senior editor, networking.

Will users welcome third-party vendors?

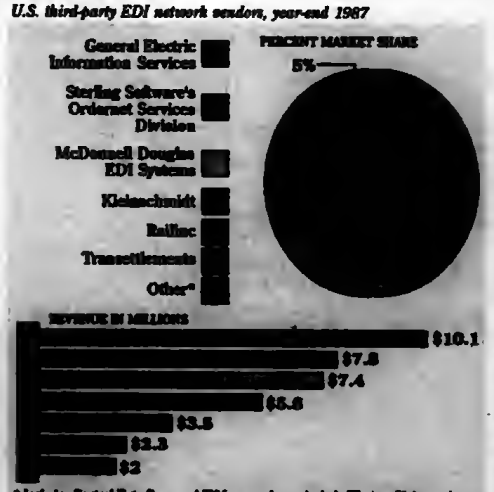
In chaotic world of EDI, they provide extras, 24-hour assistance, help with standards

BY JUDITH FEDER

If you're wary about setting up electronic data interchange (EDI) in your MIS shop, there are plenty of EDI service vendors out there that can do it for you.

And judging by the entrance of new players into the marketplace, the role of third-party service providers in connecting customers and their trading partners in EDI relationships has become more important than ever to MIS managers.

In recent months, Western Union Corp., U.S. Sprint Communications Co./Telenet Communications Corp. and Compu-



mation Systems Department and chairman of the Chemical Industry Data Exchange Committee, it is because these services offer communications capability operating around the clock, which is crucial to many companies.

"That's what a third-party provider can do better than an individual player," Foote says. High network performance standards are also among the benefits users see in third-party networking.

In addition, both new and veteran third-party players are stressing a full-service approach to EDI that goes beyond providing network capacity. These companies enrich their EDI offerings with services such as translation capabilities, electronic mail, third-party network interconnections, training, hard-copy delivery options and data base access.

Vendors also help sell the EDI concept to trading partners that may be resistant to or simply ignorant about what EDI can offer. One major vendor is reported to spend up to 40 hours converting each trading partner of its EDI customers.

Seeing clear

Perhaps the most important element, users look to third-party vendors to establish order in what one MIS executive recently described as the "rat's nest" that is EDI.

Competing standards are what continue to characterize the overall EDI environment, largely because of adherence to incompatible data formats. Public standards such as ANSI X12, industry standards such as Ordernet for the pharmaceutical market and private or proprietary standards — including those developed by many mass merchandisers — continue to be used today.

Therefore, users requiring translation between incompatible EDI formats look to third-party vendors to provide or recommend translation software that resides on customer computers or to perform "in-network" translation.

> THIRD-PARTY emphasis on full service is a virtual necessity, simply to meet the varied needs of today's EDI community.

Third-party emphasis on full service is, thus, a virtual necessity, simply to meet the varied needs of today's EDI community. E-mail, for example, is a value-added service that has assumed greater importance in the EDI market, especially as EDI customers seek nonstructured electronic links with their trading partners and E-mail customers become interested in using EDI.

That is why Control Data Corp.'s Redinet is now bundling Redi-Mail E-mail software into its micro-based turnkey EDI package. The three new players in the field, Western Union, Compuserve and U.S. Sprint/Telenet Communications, are leveraging their experience as E-mail providers to bring both current and new customers into the EDI fold.

Leading contenders

GE Information Services, Ordernet and McDonnell Douglas hold the top three spots in EDI revenue and market share (see chart above).

McDonnell Douglas adheres to its strategy of generating revenue primarily from network traffic; the company certifies translation software that customers install on their own machines.

GE Information Services, a division of General Electric Co., takes a more full-service approach, stressing in-network translation and mailbox capabilities.

Ordernet is perhaps most closely identified with the successful pursuit of vertical industries — pharmaceuticals, hardware and household product manufacturers.

Seeking to bridge the gap between themselves and the market leaders, several third-party vendors are raising their EDI profiles.

Undoubtedly the most formidable is IBM's Information Network, which the company says can woo users with its Systems Network Architecture (see story page 54).

CDC's Redinet, which is bringing a number of EDI pilots into full-scale implementation this year, has added value to its network through a range of new services while maintaining its reputation as a low-cost provider.

Everyone's a prospect

Among the new players, Compuserve is aggressively pursuing the EDI business of its current customers — and its customers' customers.

Elizabeth Sibbring, marketing manager of Compuserve's EDI, says, "We look at all trading partners as Compuserve prospects and EDI as just one of several services we can offer customers."

Western Union has adopted a similar stance, positioning EDI as one of a growing number of options on its Easylink E-mail network.

U.S. Sprint/Telenet jumped into the middle of the EDI market through resale agreements with Ordernet and Transettlements, Inc. and can now count Digital Equipment Corp., Tandem Computers, Inc. and Ball Corp. among its base of customers.

U.S. Sprint/Telenet's approach to EDI is in keeping with its emphasis on providing a full range of network services via the acquisition of a range of applications capabilities. ●

Third-party advantage

Why do certain corporations choose to use EDI third-party services rather than linking directly with their trading partners?

According to Lee Foote, EDI manager of Du Pont Co.'s Infor-

(see story page 58).

Foote is a free-lance writer and consultant at Link Resources Corp. in New York.

Getting started

Experts advise that the first step to adopting electronic data interchange (EDI) is to develop an implementation plan. This plan should include the following tasks:

- ✔ A cost/benefit analysis as to whether translation software should be licensed or written in-house.
- ✔ A study of the company's existing paper flow and how it can be improved.
- ✔ A determination of which departments could benefit from EDI.
- ✔ Decisions about which trading partners should participate — usually starting with the largest ones.
- ✔ A timetable for full implementation.

Second, hardware communications protocol requirements have to be considered. This involves studying distance of transmission, delivery time frame, volume of transactions, number of trading partners and security issues. Next, software requirements must be determined.

Finally, there should be face-to-face meetings with trading partners to hammer out issues of security, format and organizational matters, such as who initiates the call and how often transmissions will be sent.

LAWRENCE STEVENS

EDI

FROM PAGE 54

resulted in organizations receiving discounts and better terms by making more timely payments. But this revolution in cash management will be more dramatic with the increased use of electronic funds transfer, a type of EDI in which payments are electronically transferred from the purchaser's to the vendor's account.

Currently, the largest electronic funds transfer project has been undertaken by GM and a number of its vendors. James J. Hopes, vice-president of Chase Manhattan Bank NA in New York, is involved with the GM project.

That extra 10%

Hopes points out that electronic funds transfer is a natural progression from EDI. "With EDI, you transfer information about the funds you will be sending. But if the actual funds are sent through the mail," he says, "there will still be some matching and inputting of work as well as some delay."

He adds that once a company sends data electronically, there is only an additional 10% effort required for it to send funds as well. He says banks will increasingly transmit both funds and business data and will, in that sense, act as third-party EDI vendors.

Hopes says that in the near future, banks will be able to offer contracts even to smaller businesses so that electronic funds transfer may be the main means of funds transmission.

"We don't yet have nearly the volume to determine how much this is going to cost," he says. "But we've put [together] a large effort to create the software to be able to do this on a wide scale, and prices will definitely drop."

What about the float?

But Hopes says he can see why some businesses might resist implementing electronic funds transfer. He points out that companies are used to sending checks by mail and that cash management systems are based on the fact that checks will not clear for a week or longer after they are sent.

"Electronic funds transfer means more than changing the way we send funds," Hopes says. "It also means we'll have to change the way we manage them."

Determining when the money changes hands was what prevented Ford from using electronic funds transfer. The problem lay in what happens to the lost float — the use of money between the time a company sends a check and the time it is cashed.

Ford's Richards says, "When we were discussing electronic funds transfer, our purchasing people wanted to give the float away and not negotiate it into the price. The treasurer's office wanted to keep it. We had a Mexican standoff."

Super Valu's Klima

While Ford was trying to solve that problem, it conducted a survey of 10 to 12 suppliers. What it found, Richards says, is that suppliers "were more concerned with receiving the check stubs electronically than [receiving] the funds themselves."

Ford is now involved in a pilot project with two suppliers in which the auto company electronically sends information formerly found on the stubs of the check. This transmission relieves the supplier of having to match the stubs with invoices. The check is mailed directly to the supplier or the supplier's bank, as always, and the bank then advises when the funds are available for use.

"Until organizations work out the problems of float," Richards says, "electronic funds transfer will be a tough issue" (see story page 58).

Other companies that have worked hard to institute good cash management procedures worry about what electronic funds transfer will do to their competitive advantage.

"We have a good cash management program, and we get a 2% discount if we pay in 10 days," Super Valu's Klima says. "We don't want electronic funds transfer to level it out, so all purchasers get the same terms and we lose our edge."

EDI is now feasible for most companies because it is based on the accepted cross-industry standard ANSI X12. This acceptance has made it easier for many vendors to develop software that translates flat files into standard formats. Therefore, implementation of EDI can be relatively simple for many users, since they will only have to buy

How many people will use EDI?

Projected U.S. EDI user community growth, 1987 to 1991

INFORMATION PROVIDED BY LINK RESOURCES CORP.
CW CHART: AMY J. SWANSON

and install the software.

Users can implement EDI in two ways. They can develop independent EDI communications directly, or point-to-point, with their vendors or suppliers or they can communicate with their business partners via a third-party network.

A little or a lot?

There are also different levels of EDI implementation. If a company wants to get its feet wet, it can begin by purchasing a personal computer-based system for between $15,000 and $20,000 — including a modem, software and PC — and simply send and receive documents. It is not necessary even to own another in-house computer. The savings is in the cost of postage and preparing the paper mail. The software takes care of formatting the data, so there is no need to have specific knowledge of standards.

But the real benefits of EDI are seen when the system is integrated with the organization's payables, receivables and other files. In this fully integrated scheme, when invoices are received, they automatically go into the payables files, and when purchase orders are received, they automatically go into the shipping files.

The cost of setting up this kind of a system varies, depending on whether the company will need more hardware and the level of development effort it requires. The amount of in-house programming depends on how tightly EDI is to be integrated into the current system.

K Mart's Sweetapple

In general, the cost of high-end software runs about $25,000, but that estimate is assuming the company does not need to buy any more additional computer power.

To cite an example of a complex system, United Refrigerated communicates with customers and with 31 locations from three IBM System/38s. When a release order comes in, it has to be sent to the appropriate location and assigned to the correct truck. Bridges bought translation software but also had to have software written in-house to transfer the release to the order-entry area, which, in turn, controls communications that signal the EDI interpreter to begin and also interfaces with the company's data base.

While cost is a major factor in deciding when and how to implement EDI, most experts warn that once the decision is made, an organization must make the necessary commitment to see it all the way through.

"At the very least," Toebbe says, "you need a committee made up of finance and MIS people who can devote whatever the required time is to develop and oversee the project. EDI demands changes in the way a company does business, and serious effort is needed to realize that."

Third-party vendors

A growing number of EDI third-party vendors offer mailbox store-and-forward services (see story page 55). One such service frees users from having to keep up with minor changes made to standards every six months.

Some EDI users prefer to send and receive transmissions in batch rather than real time. Input's Wheatman says, "It's a question of whether you're set up to receive transmissions at any time during the day or if you want to receive them when you're ready."

While companies can choose whether they want to receive data from third-party vendors, all have to be willing to send data to those vendors when a customer is using the service. Since sending through a third party is about the same as sending direct, most organizations do not mind.

A small number of firms, however, have experienced problems with third-party services and encourage their partners not to use them.

United Refrigerated is one such company. "There is always the potential for problems in computer transmissions," Bridges says, "but when you go through a third-party vendor, the problems are more out of your control."

Ford's Richards

The latest development in EDI is that overseas links are becoming stronger. For example, in London last February, International Network Services Ltd. linked its network to the worldwide EDI services provided by GE Information Services. This event created the largest EDI community in the world with more than 2,500 users worldwide.

Also in February, U.S. Customs Service Commissioner William von Raab announced in Brussels that U.S. Customs will actively participate in EDI. Von Raab also said that the Customs Service will adopt Edifact, the newly developed series of international standards for EDI.

U.S. Customs will move forward in this area by establishing its data requirements in international standards and will accept Edifact messages for the current Automated Broker Interface requirements during 1988. To make this transition, Customs will institute a pilot project working with major importers in the U.S. and with European community and Edifact rapporteurs. •

Banks look before leaping into EDI

BY ERIC ARNUM

Banks have the potential to play an enormous role in providing electronic data interchange (EDI) — but they're taking their time about it.

Today, banks primarily perform the electronic funds transfer portion of an EDI transaction for large corporations and their trading partners. However, many institutions are cautious about rushing into more activity.

A survey taken late last year by *American Banker* found that only 26 of the 100 largest banks that supply comprehensive cash management services are making a significant investment in EDI. Most surprisingly, 43 banks said they had no plans to do so.

Filling the wires

Banks are at the forefront of both data processing and data communications, especially when it comes to electronic payments. Between banks, more than $425 billion travels daily on an electronic funds transfer network called the Clearing House Interbank Payment System.

The Federal Reserve Bank runs a payment system called Fedwire, which is regularly overwhelmed by the volumes sent by U.S. Department of the Treasury bond traders and federally chartered banks.

Even though almost all transactions between banks are accomplished electronically, the use of electronic funds transfer systems by payers and payees remains light. Only about 2% of corporate trade payments travel electronically end-to-end from payer to payee on any Automated Clearing House (ACH) network.

Waiting and watching

While an identifiable and measurable benefit can be derived from cash management systems — as well as from EDI for purchase order and invoice management — bankers seem to be waiting to measure the benefit of EDI and electronic funds transfer systems. Initial projections are not encouraging.

For example, even though direct deposit and other direct government payments account for about 45% of the ACH's total volume, the federal government's new Vendor Express system is forecast to save only about $25 million in operating costs, a fraction of its daily operating budget.

Paul Mayland, vice-president of corporate payment services at Manufacturers Hanover Trust Co. in New York, says he is waiting to see what form the integration of electronic funds transfer and EDI will take.

There are three possibilities, he says. Banks could carry both the payment and the supporting reference data; they could carry the payment with a reference number and pass off the actual reference data to an EDI network; or an EDI network could pick up both the payment order and the reference data from customers and pass off the payment order to the appropriate bank.

All three alternatives are technically possible, but the last choice raises significant questions about liability. Communications carriers such as telex networks are usually not liable beyond the cost of a message. Banks are liable for the full value of a payment mistake. But who will he liable when a communications carrier acts as an intermediary between a bank and its customers?

What makes more sense is to appoint a single bank to be the EDI link for an entire network. A partnership of this kind takes advantage of the strengths of both EDI vendors and banks. The banks already have the payment systems in place. EDI vendors have the network links to customers.

For instance, Chemical Bank in New York already relies on

Arnum is editor of "EMMS," a New Canaan, Conn.-based newsletter that covers the E-mail industry.

GE Information Services as the network carrier for its Chemlink cash management service. Would it be unreasonable to give Chemical a mailbox on GE's EDI-Express system? Chemical could then pick up its electronic mail, make the payments and use EDI-Express to send a message to the recipient's mailbox.

The bankers that control the payment systems are anxious to find new sources of fee-based income to replace the money they used to earn on the interest rate spread.

For instance, a bank can derive several hundred thousand dollars each year in fee income from a client that uses its cash management system. This is possible because business-checking clients can, in turn, derive as much or more money from putting their surplus capital to work. But neither a bank nor its clients will find the same cost justification in an EDI system that helps them pay their bills more quickly.

Why? An EDI user will automate the processing and preparation of payment checks as much as possible. This automation will extend as far as the stuffing and stamping of envelopes and possibly even to sorting, to take advantage of lower postal rates.

But from that point, time is on the side of the company paying the bill, because the longer it takes for the payment to make it through the mail, the longer the payer has use of the money. It's a sad fact that the slow and inefficient movement of paper through the mail sometimes has a positive effect.

When the check arrives and is deposited by the supplier, his bank can take advantage of some of those same inefficiencies of paper. The day the check is deposited — or at worst, the next day — the supplier's bank can use one of several electronic networks to clear the check. But the depositor's bank may not credit his account for several days, allegedly because the check takes that long to clear. During those two or three days, the bank can derive income from use of those funds as they "float" through the payment system.

In other words, a paper check system benefits the payer and the payee's bank at the expense of the payee. A fully electronic system will benefit the payee by wiping out the float. The payer, who can reduce costs in the processing of a payment, takes a loss from its more rapid communication.

IT'S A sad fact that the slow and inefficient movement of paper through the mail sometimes has a positive effect.

Banks will gain nothing from float reduction, because chances are they'll be winners half the time, losers the other. It is no surprise that banks are cautious about extending this capability to their customers.

Funds transfer standards

Various formats have been suggested for company-to-company electronic funds transfer systems that use banks as intermediaries.

The Cash Concentration or Disbursement format is usually used for cash management systems. It is sometimes used for payments, even though it cannot carry much information on what the electronic check is paying for. The Corporate Trade Payment format can carry both the payment and related information, such as the invoice number.

The more elaborate Corporate Trade Exchange (CTX) format is actually part of the ANSI X12 standards currently used in EDI. Last month, the ACH network processed its first CTX payments on behalf of the General Motors Corp. EDI network.

The question is whether either the banks or the EDI vendors are willing to settle for half the market. Once the format questions are settled, the banks can easily push their existing private networks into new applications such as EDI. And once the Glass-Steagal Act restrictions on financial institutions are repealed, virtually any company may be sble to accept deposits and make loans. •

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Who should spearhead corporate electronic publishing?

An installed base of 200,000 packages — and growing — calls for prompt managerial attention

BY ALAN RADDING

Do you pity the poor desktop publishing guy in the recent Macintosh television ad? Here is an urgent gathering of top executives trying to develop a proposal for a major piece of business, and nobody but the guy with a few Macintoshes in his department can manage to get anything done. He starts out enthusiastically volunteering to take on some responsibilities, and 30 seconds later, everything is being dumped in his lap.

Though obviously slanted toward Apple Computer, Inc.'s views on desktop publishing, this ad dramatizes the chaotic situation in corporate electronic publishing today. "Leadership is lacking now," says David Goodstein, president of Interconsult, Inc. in Cambridge, Mass.

"Local heroes arise to champion local solutions to problems. But who represents the needs and concerns of the corporation as a whole?" he asks. Often, it seems that no one is in charge of corporate electronic publishing.

"You have islands of people at the vice-president level or under doing their own things," says Patricia Seybold of Seybold Office Computing in Boston.

Who will manage and protect the growing data base of text and graphics created for electronic publication? Who should control purchasing decisions about software, laser printers, scanners and workstations?

The investment in corporate electronic publishing is already substantial. According to Goodstein, approximately 200,000 packages were sold in 1987, and shipments of small laser printers are projected to reach one million units annually by 1989.

Radding is a Boston-based author specializing in business and technology.

Money hungry

The bill for corporate publishing of all types is "huge," says Ted Freiser, president of John Diebold & Associates. In its survey of firms with $400 million or more in annual revenue, Diebold turned up the following expenditures:

- A technical division of a major manufacturer spends more than $3 million annually to produce and update its catalogs.
- A software vendor spends nearly $4 million annually to provide manuals for its clients.
- A large utility that publishes direct mail, brochures and billing inserts spends $1.5 million annually.
- A pharmaceuticals company spends more than $3 million on published marketing materials.
- An insurance company spends $3.5 million on rate cards, business forms and manuals.

Goodstein sees some individual departments discovering excellent solutions for specific problems, but nobody is coordinating the overall effort.

While some departments are deeply into electronic publishing, others may be just getting past the era of Linotype machines.

From a hardware perspective, corporate electronic publishing cries out for centralized management. Despite the promise of distributed desktop publishing, some equipment is

- **Islands of automation all over again**
- **Publishing's sponsors are *local* heroes**
- **Text and graphics: New assets to protect**

too expensive for departmental solutions. This hardware must be networked and shared.

Furthermore, the technology yields valuable electronic data bases of text and graphics that must be secured with the same care given the organization's central MIS data bases, says Woodrow Vandever Jr., executive vice-president at Interconsult.

Analysts offer a wide range of views as to how companies might manage corporate electronic publishing. Goodstein recommends perhaps the boldest solution — that companies create a new position, chief publishing officer, or CPO.

"Unlike the previous information technology czars, the CPO's role will be neither to centralise nor to restrict. It will be, rather, to encourage, coordinate and facilitate," he says.

The reason a CPO could not enjoy great centralised power is because corporate publishing is already decentralized. There are different groups to handle publishing for corporate communications, marketing, technical support, design and engineering. Instead of being "a checkbook dictator, enforcing adherence to standards or demanding that all equipment come from one supplier or another," Goodstein says, the CPO would act more as an expert liaison between the office automation, MIS, computer-aided design and reprographics departments.

Not a dictator

Seybold says she does not see a CPO emerging as such to manage the publishing process. Instead, she predicts that control will split along the lines currently in place. "I see no corporate publishing czar. The logical person to run it now would be the CIO: He has the tools, but someone else is actually responsible for the data," she says.

This sharing of responsibility is not very different from the situation in MIS today in which the chief financial officer ultimately controls the organization's financial data, but the director of MIS controls the tools for crunching that data.

Changes in technology are transforming the nature of publishing itself, Seybold maintains. In the past, a document was published when someone sent it to the printer. With electronic technology, some documents may never make it to a printer yet still be widely distributed — "published," but in an electronic sense.

"When we publish something, we really are saying that we're releasing this view to a broader audience. The document is ready for other people to see it in whatever form we're going to use," Seybold says. The document may go to a printer, but it might instead be distributed on compact-disk/read-only memory or through electronic mail.

Minnesota Mutual's Schultz

Diebold's Freiser says he approaches corporate electronic publishing from the standpoint of how the organization is handling its conventional publishing now and exactly what kind of documents it needs. His view is the most conventional in terms of traditional printing and publishing.

"We look at what organizations are producing in-house and what they are producing outside," Freiser says. The goal of the technology, in his view, is to automate a mechanical process to "improve quality at a lower cost."

To manage its investment in corporate electronic publishing, an organization should "allocate responsibility in the same way that it does for other areas," Freiser recommends.

In companies where conventional printing and publishing are already centralized, Freiser says he expects some sort of CPO will emerge. Where printing and publishing are already decentralized, it will be hard to centralise electronic publishing, he warns.

Some level of centralised control, however, is necessary to ensure compatibility and avoid wasteful duplication.

"We recommend some kind of central clearinghouse of information," Freiser says.

He says he has not found any organization yet that has effectively resolved the question of whether to put a single person in control. Corporatewide publishing "is a big mess," he says.

Freiser recommends that, eventually, either a corporate communications or administrative department provide the central direction. He says publishing is not an area that should fall under MIS control. MIS has "a lot of expertise to contribute to a high-expense area," he says, "but there's a much broader issue, which companies have not looked at. The issue is how the company is communicating.

"Computers are an important part of it, so you shouldn't keep MIS out of the decisions. But you shouldn't let them make the decisions either," Freiser continues. He recommends that interested buyers look at the total

From forms to documentation to marketing

Different sites are at varying levels of sophistication and volume when it comes to electronic publishing:

• Minnesota Mutual Life Insurance Co. began its publishing efforts with an electronic forms application. To keep up with the volume of paper, Minnesota Mutual was having 90,000 cubic feet of warehouse space filled with preprinted forms. Using electronic-form design software, the company began converting certificates and policies into an electronic counterpart stored on an IBM 3090. Now Minnesota Mutual handles up to 4,000 forms per day.

• At Prime Computer, Inc., documentation is the main focus of corporate electronic publishing. More than 60 writers work on technical documentation, entering their text into a central Prime 50-series computer. Illustrations are handled electronically on another system.

Prime's system is an electronic version of what the technical publishing department had been doing mechanically and is in the initial stages of automation.

• In the 1970s, Caterpillar, Inc., under a rapidly increasing burden of documentation, turned to automated publishing to create and manage text and data, create and manage line art and manage photographs. The Caterpillar system evolved steadily. In 1977, the company installed an Atex, Inc. publishing system to develop an on-line product-support informational data base. Beginning in 1980, Caterpillar built an informational data base for extensive parts catalogs.

In 1985, the company began evaluating personal computer-based graphics workstations. By late 1987, the department started using Apple Computer, Inc. Macintoshes as a graphics design tool. With the Macintoshes, the group is starting to move beyond technical documentation and into marketing areas.

ALAN RADDING

printing and publishing requirements and "make decisions in light of new technologies."

Beginning stages

Companies currently looked upon as models in the implementation of corporate electronic publishing still fall far short of what consultants envision. The reason is that the concept is still in its infancy.

"There are two stages to development," Interconsult's Goodstein says. "First, there is the automation of what you are doing mechanically. Then there is true automation, end-to-end flow and management."

Right now, even most of the leading corporate electronic publishing organizations are still in the first stage, automating the publishing activities they previously accomplished through non-automated means to realize productivity gains. Once that process is complete, they can move on, producing a system that has more inherent value because it opens new areas of productivity. One such area is a corporate electronic publishing data base, in which all the organization's published information is stored and able to be retrieved.

In 1984, Minnesota Mutual Life Insurance Co. in St. Paul implemented an electronic administrative forms publishing system. In March 1987, the company expanded that system to include policies and certificates. Managing the system is the responsibility of Beatta Schultz, senior office automation analyst, but she expects electronic publishing to grow beyond her and the coordinator who reports to her.

A team of staff members from the particular departments involved manage the current system. The forms management department handles forms design, and information services provides the applicant data. Automation services, which is Schultz's department, coordinates the entire process. Schultz's laser printing coordinator oversees day-to-day operations.

Through corporate electronic publishing, Minnesota Mutual is seeing both a productivity gain

and an improvement in quality. The company saves one cent per page before even administrative savings.

On the administrative side, Minnesota Mutual was able to eliminate seven clerical positions. "The payback for the project is less than two years," Schultz says.

Through the forms library, Minnesota Mutual now owns what will someday be a massive corporate data base of all of its products. With the direct-mail and public relations departments expressing interest, the system is poised to expand, Schultz says.

Corporate consumers

Percentage breakdown of corporate expenditures on electronic publishing by application, projected for 1991

INFORMATION PROVIDED BY CAP INTERNATIONAL, INC.
CW CHART

Not surprisingly, corporate electronic publishing has made its biggest inroads in the technical publishing area. Technical publishing departments have a systems orientation by nature, and technical documentation is often regarded as a major component of an organization's manufactured products. The detailed proposals, parts catalogs and service manuals readily lend themselves to automation.

Ron Bergman, senior manager of technical publications at Prime Computer, Inc. in Natick, Mass., regards himself as a publishing person, not a computer person. He has watched automation grow in the past 25 years from typewriters to corporate electronic publishing.

Bergman's department creates the technical manuals that accompany Prime's products. Five years ago, the department was split off from corporate communications and moved to engineering. The change allowed Bergman's writers to focus better on the products, he claims.

Bergman's technical publishing system remains an island within the organization. Two years ago, the company initiated a corporatewide review of all its publications and established a comprehensive standard that governs the layout and design elements of every document that bears Prime's name, be it a marketing brochure or a specification sheet. Bergman follows that standard, but otherwise, his department remains "fairly independent."

Once the initial automation is complete, Bergman says he wants to pursue some alternative forms of corporate electronic publishing. He is intrigued by technologies such as CD-ROM. "Eventually, I'd like to see us ship in electronic form," he says.

A winner

In 1985, the technical documentation department of Caterpillar, Inc. in Peoria, Ill., produced more than 150,000 new and revised pages, created 10,000 technical illustrations and edited 40,000 photographs.

In addition, the department managed a graphics library containing more than 100,000 line drawings of 200,000 photographs. It produced documents in more than six languages and distributed 23 million microfiche worldwide, according to Lynn Swigart, manager of communications services at Caterpillar's marketing support department.


Interconsult's Goodstein

"If this were my company, I'd establish an independent CPO," he says. Swigart is the closest Caterpillar comes to having a CPO, but his job is not the position championed by Interconsult's Goodstein. Still, Caterpillar is the organization most frequently cited by experts pointing to successful examples of corporate electronic publishing. The company established its initial publishing systems more than 15 years ago. Today, it uses a variety of them to produce technical documentation, publish extensive parts catalogs and price sheets and produce marketing materials. At the same time, other Caterpillar departments ignore the systems altogether and continue to handle their publishing needs in nonautomated ways.

The key to Caterpillar's successful evolution into corporate electronic publishing, Swigart says, lies in the creation of a publishing systems group within his department. The group has expertise in traditional publishing and in computer systems technology. Established in 1978, it is responsible for strategic planning, research, development and implementation of new publishing technologies.

The publishing group works closely with corporate MIS, according to Swigart. In particular, the two departments are jointly developing host-based graphics and data base publishing systems.

Still, Swigart insists that management of corporate electronic publishing should reside outside of MIS. "Companies that only see [corporate electronic publishing] as computer-related and put it into MIS are making a serious mistake," he says.

Needs a boss

The question of who will manage corporate electronic publishing is taking on greater urgency with the proliferation of relatively low-cost desktop publishing throughout the organization. The situation recalls the debates over whether MIS should manage end-user computing.

In the end, the question of who manages corporate electronic publishing comes down to this: Do you manage the technology or the application?

To Swigart and others, the answer is clear: MIS can lay claim to hardware expertise, but the real issue is communication, and, ultimately, "communication is not a DP function." According to this view, MIS has or soon will have the technical expertise to do corporate electronic publishing, but it is up to business managers to figure out how to use these tools in corporate communication. All MIS can do is make them available.

In some ways, the technology parallels spreadsheets: MIS can provide good software, but without anyone managing its use, bad financial models can proliferate.

As Interconsult's Goodstein sees it, the current lack of strong corporate electronic publishing management will not go on indefinitely. "Anything that corporations spend a lot of money on sooner or later has its own manager." •

MANAGEMENT

TAKING CHARGE

James Connolly

Plead case to new jury

The exhortations from consultants and successful managers have become a steady background drone for MIS managers in the last few years: Make information a corporate asset, form strategic partnerships with business units, let information systems stand as a peer with sales and manufacturing and so on.

It all makes sense and appears to be sound business advice that everyone in MIS should heed. But there remains one gap those well-intentioned speakers should be filling. They have to pitch their messages to someone outside of MIS. The message has to reach the company president and the non-MIS groups with which MIS wants to work. And the words of advice may ring truest if they come from outside the company, rather than from the president's own MIS group.

Part of the problem, however, is that too many of the management consultants and high-profile MIS managers who speak about their success stories have been preaching to people who agree with them.

Sounds great

Those people in the audience are already trying their hardest to carry out the advice and integrate MIS with the rest of the business world. The speakers

Continued on page 68

MIS in with Schwinn

Walsh wheels and deals to update bike maker

BY NELL MARGOLIS
CW STAFF

CHICAGO — When the photographer arrived at Schwinn Bicycle Co. to take a portrait of MIS Director Robert C. Walsh, he found his subject sporting a blue sweatshirt with "Schwinn" emblazoned in red across the front. "I did have a second thought about it," Walsh says, but his first thought won out.

The sweatshirt says it all: Walsh is a company man.

The 93-year-old company is booming today, in no small part because of the efficiencies brought about when Walsh took its computer operations from a state of decay to state of the art. He supervised the renovation of the warehouse in Chicago's West Loop area, which serves as Schwinn's headquarters, and takes a proprietary interest in the antique bicycles that adorn its halls. But Walsh is no less excited by a modern exercise bike, which he points to, reveling in its space-age technology. It was designed with computer-aided design (CAD) technology that he was instrumental in bringing to the company.

Before joining Schwinn, Walsh headed up systems operations for a small hospital and then for a community college. "He threw himself into them, too, but I think he's really found his niche in business," says Paul Kristofek, Walsh's long-time friend and, until the Walshes moved last summer, his neighbor.

Wheels turning

"When I drive away from work in the evening, I leave it at the company," Kristofek says. "Not Bob. Give him an opportunity, and he'll get up on the Schwinn soapbox any time."

Given half a chance at work, he'll talk about his wife and three teen-age sons, their summer house on the shore of Michigan's Sister Lakes and his latest hobby — flying.

"Bob always has had a very complete outlook on life," Kristofek adds. "He's got a brilliant, calculating mind, and he's also very friendly and outgoing. Bob relates everything to everything."

Walsh brings his holistic view

Continued on page 68

PROFILE
Robert C. Walsh

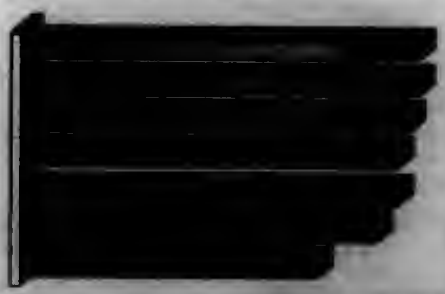
PHOTO BY STEVE KAGAN

***Position:** Director of MIS, Schwinn Bicycle Co. in Chicago.*
***Mission:** To achieve productivity and profitability through technology.*
"We're here for the business, not vice-versa"

Data View

Special skills pay

Electronic data processing auditors and specialists edge to the top in median salary, while operators lag well behind



INFORMATION PROVIDED BY SOURCE EDP
CW CHART

California smog fuels telecommuting plans

BY J. A. SAVAGE
CW STAFF

SACRAMENTO, Calif. — Oppressive smog and congested highways in Southern California are two reasons a seemingly old concept, telecommuting, is finding new energy. Though it was hailed as a panacea for everything from traffic to boredom in the early 1980s, forecasts of empty office buildings have not yet become a reality.

If there is a future for telecommuting — which some researchers doubt, citing cultural barriers — it is riding in large part on the biggest pilot program to date, sponsored by the state of California.

By this summer, pilot project director David Fleming said he expects to have 250 telecommuters from 11 state agencies, only one-third of who are at a management level. However, those management personnel, particularly middle management, may be the same ones to sabotage the program if they resist the necessary changes in management style.

Continued on page 66

Telecommuting

CONTINUED FROM PAGE 65

The pilot program includes surprisingly few data processing personnel, Fleming said. He said the bulk of telecommuters are those who write or number-crunch as part of their jobs — lawyers, engineers and program analysts.

Telecommuting is becoming easier and cheaper, according to Fleming. The cost is dropping 25% per year, he said. This is partially because of the lower cost and wider availability of the technology needed to hook up a telecommuter to the main office, and it is partially a trade-off for the higher cost of office space needed in a downtown building to house workers, he said.

Fleming stressed that circumstances have changed in the past 10 years to make telecommuting a more viable option. "Now we're dealing with information more in proportion to the manufacture of widgets. Additionally, it is a solution to business problems, specifically that of retaining employees." For instance, there are more two-income families today, with one member unwilling to move to a new location. Telecommuting is an option that would allow that employee to keep a job.

Savings estimated at $25 million

Fleming's hope is that 10% of the state's work force can spend two to four days a week working out of their homes. "A back-of-the-envelope estimate is that the state can save $25 million a year in the cost of leasing office space," he said.

A law going into effect July 1 will require employers in the smog capital of Southern California, known as the South Coast Air Basin, to encourage employees to stay off the freeways and offer the option of telecommuting.

Pacific Bell is one of the first private companies to jump on the telecommuting bandwagon. It began a pilot program in 1985 with 100 employees. Now, it has an official telecommuting program with between 500 and 1,000 employees, according to a company spokeswoman. However, its program is open only to management-level employees, of which Pacific Bell has 17,000 in California.

The underlying promotion for telecommuting is for Pacific Bell clients, not its employees. Clients in Southern California are expected to need the company's services in order to set up telecommuting to cooperate with this summer's smog legislation.

'Insignificant phenomenon'

While telecommunications companies see telecommuting as a pot of gold, some academics, like Margrethe Olson, associate professor at the graduate school of business administration at New York University, call it an "insignificant phenomenon."

"It's all been 'about to happen' for eight years," Olson said. In a report to the National Science Foundation, she found that "in none of the cases [studied] did management see telecommuting as a significant benefit to the employee or organization. In all cases, supervisors would have preferred the employee on-site if they had the choice."

Fleming acknowledged that, in part,

Project director Fleming

Olson is right: Management is the problem. "It boils down to trust. There must be a shift in management from a passer of information to one of being a leader and coach," he said. "One of the biggest barriers is that middle managers are threatened."

Fleming hopes his pilot project will curb those fears through training and a careful selection of participants who show a predilection for working alone. "The training allows management's worst fears to be let out. It gets them to start thinking." To underscore management's fright, Fleming said some supervisors did not want telecommuters to attend training classes.

Training includes how to set up a home office and how to overcome compulsions, like excessive jogging or excessive eating. "In one case, a telecommuter gained 30 pounds. That person went back to the office," he said.

Coast-to-coast effort

Telecommuting is not a California-only phenomenon, although the smog legislation may be giving it its biggest push.

J. C. Penney Co.'s catalog sales, Montgomery Ward & Co.'s Signature Group in Chicago and Travelers Insurance Co. in Hartford, Conn., are a few companies that use telecommuting, according to Gil Gordon, editor of "Telecommuting Review" in Monmouth, N.J.

"It is more concentrated in California," Gordon said. "There is a high proportion of new businesses where there is no tradition to buck against, and the commuting situation is such that people may be willing to drive two days a week into the office, but not five."

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☐ 12. Military
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☐ 14. Publishing/advertising/public relations
☐ 15. Research and development
☐ 16. Retail/wholesale
☐ 17. Transportation, communications, utilities
☐ 98. Other (specify) _____

Computer-related businesses

☐ 18. Computer consultant
☐ 19. Computer retail
☐ 20. Distributor/wholesaler
☐ 21. Manufacturer (computers, software, peripherals)
☐ 21. Service bureau
☐ 23. VAR/systems house/integrator
☐ 99. Other (specify) _____

2. Title (check only one)

☐ A. Chairman/president/owner/partner
☐ B. Vice president
☐ C. Controller/treasurer/accountant
☐ D. Director/supervisor/manager
☐ E. Project manager/chief/group leader
☐ F. Art director/writer/chief/group leader
☐ G. Engineer/scientist
☐ H. Administrator
☐ I. Consultant/advisor
☐ J. Microcomputer specialist/manager/analyst
☐ K. Programmer
☐ L. Educator
☐ M. Professional (lawyer, doctor, etc.)
☐ Z. Other (specify) _____

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☐ C. Consulting
☐ D. Education/training
☐ E. Engineering/R&D
☐ F. Manufacturing/production
☐ G. Microcomputer center/office automation
☐ H. MIS/DP
☐ I. Purchasing
☐ J. Sales/marketing/distribution
☐ Z. Other (specify) _____

4a. Does your company own or lease any mainframe computers at this location?

☐ Yes (indicate quantity below) ☐ No

	Existing (quantity)	Plan to buy (quantity)
☐ 1. IBM		
☐ 99. Other (specify)		

4b. Does your company own or lease any minicomputers at this location?

☐ Yes (indicate quantity below) ☐ No

	Existing (quantity)	Plan to buy (quantity)
☐ 1. IBM		
☐ 2. DEC VAX		
☐ 3. Sun/Apollo		
☐ 99. Other (specify)		

5. Does your firm have or plan to buy any of the following types of personal computers or microcomputer systems at your location?

☐ Yes (indicate quantity below) ☐ No

	Currently own	Plan to buy within 1-12 mos.
1. Macintosh 128/512		
2. Macintosh Plus		
3. Macintosh SE		
4. Macintosh II		
5. IBM or compatible		
6. Sun/Apollo workstation		
99. Other (specify)		

6. Please indicate your involvement with each of the following types of personal computers or microcomputer systems (check all that apply)

	Macintosh	Software	Networks & Peripherals
A. Approve purchase	A. ___	A. ___	A ___
B. Develop/manufacture	B. ___	B. ___	B ___
C. Evaluate/select vendor	C. ___	C. ___	C ___
D. Own one	D ___	D. ___	D ___
E. Own two or more	E. ___	E. ___	E ___
F. Purchase or acquire	F ___	F ___	F ___
G. Establish specifications	G. ___	G. ___	G. ___
H. Recommend to others	H. ___	H. ___	H ___
I. Sell	I ___	I. ___	I. ___
J. Train people to use/or provide support	J. ___	J. ___	J ___
K. Use	K. ___	K. ___	K ___
L. No involvement	L. ___	L. ___	L ___
Z. Other (specify by name and quantity)	Z. ___	Z. ___	Z. ___

If you have no involvement with any of the above, skip to question 8.

7. Do you recommend, buy, specify or approve microcomputers, software, and/or peripherals?

☐ Yes ☐ No

If yes, please indicate for how many Macintosh personal computers you have this involvement. (check only one)

☐ A. 1-3 ☐ E. 50-99
☐ B. 4-9 ☐ F. 100-499
☐ C. 10-19 ☐ G. 500+
☐ D. 20-49 ☐ H. None of the above

8. How many people are employed by your entire company? (check only one)

☐ A. 1-9 ☐ D. 100-499 ☐ G. 2500-4999
☐ B. 10-24 ☐ E. 500-999 ☐ H. 5000-9999
☐ C. 25-99 ☐ F. 1000-2499 ☐ I. 10,000 or more

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☐ D. Director/supervisor/manager
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☐ F. Art director/writer/chief/group leader
☐ G. Engineer/scientist
☐ H. Administrator
☐ I. Consultant/advisor
☐ J. Microcomputer specialist/manager/analyst
☐ K. Programmer
☐ L. Educator
☐ M. Professional (lawyer, doctor, etc.)
☐ Z. Other (specify) _____

3. Department or function (check only one)

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☐ C. Consulting
☐ D. Education/training
☐ E. Engineering/R&D
☐ F. Manufacturing/production
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☐ H. MIS/DP
☐ I. Purchasing
☐ J. Sales/marketing/distribution
☐ Z. Other (specify) _____

4a. Does your company own or lease any mainframe computers at this location?

☐ Yes (indicate quantity below) ☐ No

	Existing (quantity)	Plan to buy (quantity)
☐ 1. IBM		
☐ 99. Other (specify)		

4b. Does your company own or lease any minicomputers at this location?

☐ Yes (indicate quantity below) ☐ No

	Existing (quantity)	Plan to buy (quantity)
☐ 1. IBM		
☐ 2. DEC VAX		
☐ 3. Sun/Apollo		
☐ 99. Other (specify)		

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☐ Yes (indicate quantity below) ☐ No

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3. Macintosh SE		
4. Macintosh II		
5. IBM or compatible		
6. Sun/Apollo workstation		
99. Other (specify)		

6. Please indicate your involvement with each of the following types of personal computers or microcomputer systems (check all that apply)

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B. Develop/manufacture	B. ___	B. ___	B ___
C. Evaluate/select vendor	C. ___	C. ___	C. ___
D. Own one	D ___	D. ___	D ___
E. Own two or more	E. ___	E. ___	E ___
F. Purchase or acquire	F ___	F ___	F ___
G. Establish specifications	G. ___	G. ___	G. ___
H. Recommend to others	H ___	H ___	H ___
I. Sell	I ___	I. ___	I. ___
J. Train people to use/or provide support	J ___	J ___	J ___
K. Use	K. ___	K. ___	K ___
L. No involvement	L. ___	L. ___	L. ___
Z. Other (specify by name and quantity)	Z. ___	Z. ___	Z. ___

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☐ D. 20-49 ☐ H. None of the above

8. How many people are employed by your entire company? (check only one)

☐ A. 1-9 ☐ D. 100-499 ☐ G. 2500-4999
☐ B. 10-24 ☐ E. 500-999 ☐ H. 5000-9999
☐ C. 25-99 ☐ F. 1000-2499 ☐ I. 10,000 or more

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Schwinn

FROM PAGE 65

of life to work.

"You can't look at a company's technology structure as separate from the company's business function: what it makes, what it sells, how it's organized," Walsh says. "To believe in tech for tech's sake, as existing outside the business, is to court catastrophe."

Walsh describes himself as "Peter Principled into MIS — I failed at being a programmer, so I got put in charge of systems." He first worked in MIS at Little Company of Mary Hospital in Chicago, and recalls meeting with constant frustration.

"People would come to MIS with legitimate needs and get told, 'I'll have it for you in a year.' That is answering in an MIS time frame, not in a business time frame," Walsh says.

When he left the hospital for Moraine Valley Community College in Palos Hills, Ill., where he headed systems operations for eight years, his philosophy was in place: "Ask, What does the business need?"

Shared philosophy

Walsh brought that philosophy to Schwinn in 1980, when he arrived with a mandate to turn a 20-year-old system into a lean, mean, competing machine "preferably yesterday," he recalls.

Walsh walked into a computer department that was writing in assembler. Five years and more than $600,000 later, Schwinn had gone through a series of system upgrades, replacing Singer Co. System 10 minicomputers with IBM System/34s and, subsequently, System/36s and installing a payroll software system from Management Science America, Inc. and the Adabas data base management system and Natural fourth-generation language from Software AG of North America, Inc.

"Software like Adabas and Natural," Walsh says, "allows the systems folks to have a great amount of empathy with the end users. For example, because you can add data elements so easily, you don't find yourself saying, 'What's your two-year plan?' to an employee who's thinking, 'If I don't get this inventory in order in four months, I'm not gonna *be* here in two years,' "

Wheelin' and dealin'

"Bob's great strength is being able to work within a company structure to get things taken care of for both the MIS department and the corporate guys," says Steve Arnold, systems programmer at Schwinn. "He's good at wheelin' and dealin'— he really gets into the game."

Both Arnold and Schwinn's Ruth Bartelt, systems and programming manager, are second-time teammates of Walsh's: The three worked together at Moraine Valley where first Bartelt and then, after Bartelt left for Schwinn, Arnold succeeded Walsh as MIS director.

"That tells you something right there," says Bob Van Raes, Moraine Valley's vice-president of planning and external affairs. "It's a chancy enough proposition just to go back to work for your old boss in a new setting; Ruth and Steve gave up titles and control to work with Bob again."

At Moraine Valley, Van Raes recalls, Walsh's wheeling-and-dealing instincts were complemented by "his eagerness to help people and his likable qualities. Bob could somehow make suggestions to people in a very nonthreatening way and get them to cooperate when other people had just gotten their backs up."

Mike Fritz knows just what Van Raes is talking about. Two years ago, Fritz, newly arrived at Schwinn as director of engineering, set out to automate the bicycle design department.

As a new guy in town trying to sell an IBM-loyal administration on costly CAD workstations, Fritz turned somewhat reluctantly to the MIS director.

"My initial feeling was that Bob would be a problem. He was an IBM loyalist, and design was in his territory," Fritz says, "But I couldn't have been more wrong."

Walsh "went to bat and did a great job for us," Fritz says. Not only did he deploy his negotiating skills on Fritz's behalf, both in dealing with Apollo Computer, Inc. and in selling Schwinn's "True Blue" front office on the CAD workstation concept, but he also suggested that Fritz double the number of Apollo systems he was requesting.

Is it Christmas?

"The key to the company's real benefit is getting one of these babies on every designer's desk," Fritz remembers Walsh saying. "All I could think was, this guy's got to be Santa Claus."

Today, Fritz oversees a $500,000 Apollo-based CAD operation; Schwinn Bicycle ranks as the leading independent U.S. bicycle maker; and Walsh has a $3 million MIS budget to play Santa Claus with — a far cry from the $700,000 budgeted for MIS in 1979.

Walsh's negotiating skills and passion for immersing himself in the company have taken him further afield of MIS than the bicycle design department.

When the building renovation began in 1986, all he had to do was lay out the computer room, but he made so many suggestions that "Ed Schwinn basically said, 'Good. If you're so smart, you can do the whole thing.' " Walsh recalls. The hard hat he wore while moonlighting as Schwinn construction manager sits on his office windowsill.

These days, Walsh is wearing his MIS hat again: In late March, he plunged into what promises to be the "long, hard but worth it" task of installing a new management software system made by Atlanta-based American Software, Inc. and training Schwinn distributors to use it.

"We could raise our level of service to dealers," he says, "lower inventory costs, increase information supply; we'll get smarter, better dealers. . . ."

There he goes again. Spokesman. Wheeler-dealer. Company man.

Connolly

FROM PAGE 65

are telling a friendly crowd just what it wants to hear. Too often, the speeches are being met with enthusiastic applause from MIS managers and followed with an over-coffee comment like, "Great, I just wish my company would let me do it."

A perky cheerleader-consultant comeback to that observation is, "But you have to make it happen." That's right, and that consultant probably used to be one of those financial advisers who tell people they can be rich if they save 25% of their income. It sounds nice, but reality hits like a ton of bricks.

Suspicion

In the case of MIS/business relationships, reality is that many people are suspicious of anything their own MIS department suggests. That might be called the what-do-you-really-want syndrome or the you-do-computers-and-I-do-sales complex.

Another rule of reality is that when you buy an idea from an outsider — whether through a consulting service or through the registration fee at a conference — it sounds a lot better than something you get for free via an aide's memo. Don't ask why; it's just human nature.

Some consulting groups say they have turned their attention toward company presidents and other non-MIS executives. But there should be a more concentrated effort to reach those people who think a spooler is just something used in a textile shop.

Whoever pitches the strategic systems concepts to non-MIS people — whether they are consultants or MIS success stories doing the talking — should work extra hard to keep their speech nontechnical and their proposals in business terms.

The most important of those business terms is "impact on the bottom line."

In addition, MIS managers — or anyone else making such a presentation — should keep in mind that changes to make use of the information for which MIS is the caretaker, moves such as realigning the reporting lines on the organization chart, for example, may be no better than conflicting changes that make better use of manufacturing's capabilities or the distribution network.

> IN THE case of MIS/business relationships, reality is that many people are suspicious of anything their own MIS department suggests.

Even when information is an asset, it is not necessarily the most important asset.

The information age/strategic systems message may have found a sympathetic ear in the MIS department, but there remains a large part of the world that has not heard it or at least has not welcomed it. Those are the people who need to be targeted next.

Connolly is Computerworld's senior editor, management.

INDUSTRY INSIGHT

Clinton Wilder

What's next for lessors?

Now may be the best time in years to lease a computer rather than buy it. And that has the computer leasing industry worried.

In the IBM equipment marketplace, unprecedented competition from IBM Credit Corp., the regional Bell holding companies and large and small independent lessors has brought the leasing industry to a crossroads. Lease rates and profit margins on IBM deals have dropped, resulting in a boon for lessees and a search for new markets by the leasing industry.

The sense of an industry about to turn a corner was palpably evident at the biannual meeting of the Computer Dealers and Leasors Association (CDLA) 10 days ago in Palm Desert, Calif. Held just six weeks after the sudden death of CDLA President Jim Benton, the meeting was dominated by official and informal tributes to Benton's dynamic leadership and lobbying victories. But the association moved quickly to ensure a smooth transition at the top, naming Econocom Chairman Ken Bouldin as Benton's successor.

Benton's gregarious style was perfect for advancing CDLA interests on Capitol Hill, where tennis with senators and cabinet members counts for a lot in the high-stakes game of lobbying. Bouldin's challenges will come on a variety of other fronts, but the low-key Southerner's successful business career should be a solid base from which to lead his colleagues and competitors.

In a sense, the leasing companies are feeling pressure brought about by their own success. With profits there for the taking through the years, more and more entrepreneurs have entered the business and are now competing aggressively.

Then there are the deep pockets, like Bell Atlantic and Bellsouth, which have both acquired major lessors and can afford to squeeze margins to gain market share. And the deepest pocketed player of all is still playing hardball. At the recent

Continued on page 72

Foreign sales buoy first quarter

Growth abroad aids boomers like Compaq, does little for mini makers

BY JAMES DALY
CW STAFF

Strong sales in the international market added luster to the good financial performance of some companies and saved others from dipping into red ink, according to first-quarter results posted last week.

"The international market tends to lag our market in terms of development and evolution by anywhere from a year to four years, and the growth overseas right now is very strong," said Charles R. Wolf, vice-president of equity research at First Boston Corp. "We believe this growth will be sustained for the rest of the year."

Overseas sales buoyed the results of firms like Compaq Computer Corp. but were able to offer only slight gains to those firms caught on the slippery footing of the minicomputer market, which has been pinched at both ends by brisk mainframe and personal computer sales.

The quarter was particularly tough on Alliant Computer Systems Corp. Despite revenue growth of nearly 13% from year-earlier results, the Littleton, Mass., minisupercomputer maker was not able to hold onto the extra cash. Income from operations plummeted 97% from $2.3 million a year earlier to a meager $71,000.

Fellow minisupercomputer maker Convex Computer Corp. was not as badly hit as Alliant, but "their results are nothing to write home about," said John L. Rutledge, an analyst at Dillon Read & Co.

Although revenue for the Richardson, Texas, company rose a significant 53% from year-earlier figures, profits dropped nearly 47%, to $1.1 million.

No room to grow

"Convex and Alliant have chosen to remain in a very competitive niche market that has simply absorbed about all it can," Rutledge added. "They've both chosen to compete in the engineering and scientific area and not go into the commercial market. Their area was saturated more quickly than the commercial

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1988 first-quarter earnings

Profits slide at Alliant, Convex and Hogan; but Stratus is strong, and Compaq soars

Alliant	$0.9[1]	(62)	$13.6	13
Ask Computer Systems	$2.6	58	$37	46
Bell Industries & Newmont	$4.5	22	$79.5	35
Comshare	$20[2]	43	$310	1
Compaq	$46.8	132	$439.5	108
Control Data	$7.7[3]	7	$902.2	10
Convex Computer	$1.1[4]	(47)	$22.1	53
Hogan Systems	$1.1	(66)	$12.8	(12)
Informix Software	$2.4	14	$25.8	98
Management Science America	$2.4	—[5]	$62.9	18
Stratus	$5.9	60	$54.2	45
Tandem	$23.3[6]	4	$309.4[7]	26

[1] Parentheses indicate decrease
[2] Includes $733,000 in extraordinary credits
[3] Excludes $6 million from discontinued risk arbitrage business
[4] Includes $3.1 million in extraordinary credits
[5] Includes $270,000 in extraordinary credits
[6] Reported $2.3 million operating loss in 1987
[7] Includes $9.4 million pretax charge
[8] Includes $13.5 million from companies acquired during quarter

CW CHART

Micom eyes offers for acquisition

BY PATRICIA KEEFE
CW STAFF

SIMI VALLEY, Calif. — Micom Systems, Inc. revealed last week that it is considering several acquisition offers, adding that those proposals led it to cancel plans for a stock buy-back offer of nine million shares.

The announcement triggered speculation that even if Micom itself was not sold, any or all of its three subsidiaries — Micom-Interlan, Inc., Spectrum Digital Corp. and Black Box Corp. — might be.

The announcement of a possible Micom sale comes on the heels of the recent merger between Network Equipment Technologies, Inc. (NET) and Excelan, Inc., and a sale would continue the year-long trend of major consolidation in the communications market.

If the entire company were to be sold, it would likely constitute the largest sale during this period of consolidation. For the fiscal year ended April 3, Micom's revenue was $223 million. In contrast, 3Com Corp. and Bridge Communications, Inc. today have combined revenues of $180 million, and NET and Excelan together have revenues of about $101.7 million.

Micom sells local- and wide-area networking products. Inter-

Continued on page 71

AT&T taps Kavner; Cassoni departs

BY ALAN ALPER
CW STAFF

NEW YORK — Just when it appeared that AT&T's long-suffering computer business was beginning to turn around, the chief architect of that comeback is returning to his native Italy.

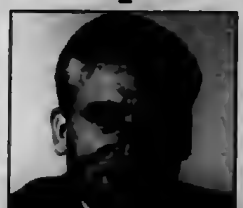
Vittorio Cassoni, the Ing. C. Olivetti & Co. executive recruited 18 months ago to revitalize AT&T's ill-fated foray into the computer business, has decided to return to Olivetti as chief executive officer. Robert Kavner, 44, AT&T's chief financial officer, will succeed Cassoni as president of AT&T's Data Systems Group (DSG), effective May 15.

The departure of Cassoni, a dynamic leader and strategist, comes at an inopportune time for the telecommunications giant. After three disastrous years, Cassoni has considerably cut DSG's losses, appears to have implemented an effective strategy based on data networking and Unix and has persuaded AT&T executives to provide DSG with a sales force to deal directly with MIS management.

Cassoni was also the driving force behind the firm's fledgling alliance with Sun Microsystems, Inc.

"This is part of a major [AT&T] shift away from Olivetti and toward Sun," explained Ken Leon, an analyst with Bear, Stearns & Co. He cited Sun's recent entry into the Microsoft Corp. MS-DOS-compatible microcomputer business as evidence of another potential tie between the two companies.

Both Cassoni and Kavner denied that strained relations between AT&T and Olivetti had anything to do with Cassoni's departure. "Olivetti wanted [me] earlier, and AT&T wanted it to occur at a later time," Cassoni said. "We did it at a time that balances both corporations' needs." AT&T owns 22% of Olivetti, and the two firms have various cross-marketing agreements.



AT&T's Kavner

Cassoni said it was he who recommended Kavner as a successor. Kavner, who joined AT&T in 1984 from Coopers & Lybrand, where he headed the Information Industry Practice, is considered one of the up-and-coming executives at AT&T. Although he lacks direct experience within the computer industry, analysts contend that his financial orientation could accelerate DSG's efforts to become profitable by 1989.

Kavner claims a strong background at Coopers & Lybrand in systems design and integration. As AT&T's chief financial officer, he presided over an internal data processing operation of some 17,000 employees. End users, he contends, are driving the acceptance of tech-

Continued on page 72

INDUSTRY WEEK IN BRIEF

Less than one month after he was named chief scientist at Borland International, Inc., Rob Shostak, cofounder of Ansa Corp. and co-developer of its Paradox data base product, resigned last week. He will be cofounding another software start-up, as yet unnamed, funded by venture capital firms. "My work is complete at Borland, and I'd rather put my talents to use at an emerging company," Shostak said. Scotts Valley, Calif.-based Borland acquired Ansa last fall.

MAI Basic Four, Inc. Chairman and principal owner Bennett S. LeBow, along with board member William Weksel, have decided to sell their stake in the Tustin, Calif., turnkey systems vendor. Together they control about 60% of MAI stock, including 17% in trusts for the benefit of LeBow's family. MAI stock soared on the news, gaining 3¾ points to a new yearly high of 19 in active trading Wednesday.

General Electric Co. announced the sale of its Calma Co. integrated-circuit computer-aided design (CAD) business to San Jose, Calif.-based Valid Logic Systems for an undisclosed amount of stock, cash and royalty payments. With an estimated 2,700 users, Calma's integrated-circuit CAD business had revenue of about $40 million in 1987.

Gambling that its bus architecture will become the graphics supercomputer industry standard, Ardent Computer Corp. will be the first supercomputer company to license its bus. The system bus used in Ardent's newest graphics supercomputer, Titan, will be available for licensing in September. It will cost only $250 for universities or research institutions — but $15,000 for commercial entities. A spokesman said Ardent hopes the licensing arrangement will encourage the development of peripherals that plug into the Ardent bus.

The computer and component revenue of Zenith Electronics Corp. easily surpassed Zenith's revenue from its ailing consumer electronics business for the third straight quarter in the three months ended April 2. Sales of computer systems and components reached $360 million, up 29% from the year-earlier quarter and accounting for 61% of Zenith's total sales. Revenue from the consumer electronics unit, which is rumored to be for sale, dropped 18% to $224 million.

Financial woes continued for artificial intelligence software developers Intelicorp and Teknowledge, Inc. In the third fiscal quarter ended March 31, Intelicorp lost $260,000 on sales of $5 million, and Teknowledge lost $1.1 million on revenue of $3.5 million.

IBM in fighting form, Akers tells group of shareholders

BY MITCH BETTS
CW STAFF

RICHMOND, Va. — IBM Chairman John Akers last week said IBM is becoming a leaner and more aggressive company in response to competitors who are "fast on their feet, listening to their customers [and] impressive in technological innovation."

Akers, addressing shareholders at IBM's annual meeting here, said IBM began a turnaround in mid-1987, and since then, earnings have grown faster than revenue. He called it "a bottom-line confirmation of efficiency and competitiveness."

IBM is a stronger competitor, Akers said, because of such recent moves as the major reorganization of U.S. business units, cuts in overhead and recently announced investments in Metaphor Computer Systems and Steve Chen's Supercomputer Systems, Inc.

In response to a stockholder's question, Akers said MCI Communications Corp. executives plan to buy back IBM's 16% stake in MCI, and Akers said he expects that buy-back "will come to pass over the next few years."

Abandon right to sue directors

In a shareholder resolution presented at the meeting, IBM stockholders voted to give company directors some protection from personal financial losses imposed by stockholder lawsuits. By approving the amendment, IBM shareholders gave up the ability to sue directors for negligence in performing their fiduciary duties.

IBM said the amendment to its certificate of incorporation in New York state is necessary because of an increasing num-

ber of shareholder lawsuits that could be financially devastating to outside directors.

A real liability

IBM management argued that the prospect of personal liability makes it hard to attract and retain qualified directors. Compounding the problem is the increasing difficulty and expense of obtaining directors' liability insurance, the company added.

IBM's proxy statement noted that the action was not prompted by any specific lawsuit or complaint against IBM. The liability amendment was approved by the overwhelming vote of 458 million to 16 million.

In other business, shareholders defeated an anti-apartheid resolution sponsored by church and civil rights groups that would have stopped all sales and service of IBM products in South Africa.

AKERS SAID IBM no longer has assets, equity or employees in South Africa.

Proponents said that IBM products are used primarily by that country's ruling white minority.

Although it was defeated, the proposal gained almost 10% of the shareholders' votes — about twice the amount of support expressed for a similar measure in 1987.

Last year, IBM sold its South African subsidiary to an independent company that sells and services IBM and other computer products. Consequently, Akers said, IBM no longer has assets, equity or employees in South Africa.

It would have been an "empty gesture" to sell the company and then stop supplying it with IBM products and services, Akers said.

Resolutions defeated

In addition, the shareholders soundly defeated the following special-interest resolutions:

- A proposal that would have banned all corporate payments, such as employee health benefits, that subsidize abortions.
- A proposal requiring IBM to provide details about its use of live animals for research and product testing.
- A proposal forcing IBM to publish details about any political campaign contributions.

A regular quarterly dividend of $1.10 per share was announced at the annual meeting, which was attended by 1,444 stockholders.

IBM also announced the promotion of Carl J. Conti to IBM senior vice-president.

Conti will continue to manage the IBM Enterprise Systems Division. James A. Cannavino was named an IBM vice-president; he will continue to head the Data Systems Division.

Micom

CONTINUED FROM PAGE 69

lan is an Ethernet-based LAN company with some Transmission Control Protocol/Internet Protocol expertise. Black Box is a catalog mail-order business for data communications equipment. Spectrum Digital manufactures T1 multiplexers.

The canceled buy-back bid, which attracted the proposals now under consideration, was for 4.8 million shares of Micom stock at $16 per share. Micom had already agreed to purchase about 4.2 million more shares owned by its three major stockholders, who are also dissident board members, for the same price. That agreement is now void.

Micom, which declined to identify its would-be buyers, said it was offered prices in excess of the current market value of the company. Micom was trading at around $13.50 per share at the time of its announcement, but jumped 2⅝ points to the buy-back offer price of $16 in heavy trading on the day of the announcement.

Micom's investment bankers, Volpe & Covington, had told Micom's board it considered the $16-per-share offer "fair to Micom from a financial point of view." But one financial analyst who follows the company termed the offer "outrageous."

Analysts said Micom's management wanted to remove board member and founder William Norred and board members Sally and John Thornton because of their outspoken criticism of the firm, and was willing to pay $16 per share to do so.

Stockholders unhappy

Although Micom's earnings more than tripled in fiscal 1988 to $9.8 million, the firm's stock price has not responded accordingly. "I know a number of heavy stockholders are unhappy with the performance of the firm," a source close to Micom said. "Thornton was [upset] at the company's performance. He's watching his millions go down the drain, and he can't do anything about it," the source said.

Micom has retained the investment banking firm of Goldman, Sachs & Co. to help the board of directors evaluate the current acquisition offers and any others that may be received. The company said a special board committee has been formed to "explore alternatives for maximizing stockholder values."

Analysts and a source close to Interlan said Interlan has been available for purchase for some time but has failed to attract any takers.

Wilder

CONTINUED FROM PAGE 69

meeting, IBM's Chick Hayden reaffirmed Big Blue's year-old practice of returning some of IBM Credit's used inventory to the IBM sales force rather than to the third-party market.

"Our traditional markets are becoming so crowded," said CDLA Chairman Bob Gulko, head of Unicom Computer in Sausalito, Calif. "Companies have to look at non-IBM business in s much more aggressive way."

What are the options? Leasing and brokering DEC equipment is the most obvious, and the DEC boom of the past two years has a lot of lessors eyeing the possibilities. But panelists at a CDLA session on the profit potential of DEC equipment described a mine field of a marketplace, thanks to DEC's aggressive posture against the secondary market.

"Not only do they have it now, but they want it all," said C. D. Smith, president of the 73-member DEC Dealers Association, which is not affiliated with the CDLA. "Initially, DEC needed help in the marketplace, but they have changed from open arms to total control."

Essentially, Smith observed, DEC's get-tough signal to add-on hardware makers in the form of closing the VAXBI bus has been paralleled by DEC's sales force offering deeply discounted VAXs to keep new accounts away from third-party used equipment dealers.

The going gets tough

Dave Harmon, chairman of the CDLA's fledgling DEC Relations Committee, was equally discouraging. Harmon's company, Sherman Oaks, Calif.-based El Camino Resources, has found rough sledding in its forays into the DEC market. "I've seen [DEC] cost themselves a million dollars going against one used CPU," he said.

Harmon is now seeking s high-level CDLA contact within DEC, an effort that began with s letter from Benton to DEC President Ken Olsen earlier this year. The CDLA is not happy with the level of contact DEC has offered so far, but will continue to push harder, Bouldin said.

Another major market CDLA hopes to unlock is the federal government, which currently operates under procurement guidelines that prohibit systems integrators from including used computers in their bids.

Although profit margins in leasing are getting tighter, the business itself is growing, and very few lessors are headed for the poorhouse. It's just a much tougher business to compete in now, and with increasingly sophisticated lessees willing to shop for bargains, that competition can only get more intense. The CDLA faces crossroads not only in finding new markets, but also in diligent self-policing of the business practices of fierce competitors. The industry could ill afford another OPM or Itel-like scandal now.

Wilder is Computerworld's senior editor, computer industry.

Kavner

CONTINUED FROM PAGE 69

nology within many corporations.

"More and more, it is end users who are deciding what applications should be run," he said. "MIS managers — at least the good ones — are acting as a conduit for this."

Kavner said he intends to begin visiting customers and value-added resellers next week to reassure them of his commitment to the computer industry. He faces a sheptical reception by those who have seen a parade of four executives before him — Archie McGill, Jack Scanlon, James Edwards and Cassoni — making similar promises. Moreover, new AT&T Chairman Robert Allen is not believed to have the same emotional tie to the computer business as his predecessor, the late James Olson.

AT&T recently said it would not increase its stake in Olivetti and is believed to be unhappy with the Italian company's progress in marketing its telecommunications gear in Europe.

Olivetti, on the other hand, is thought to be miffed by AT&T's inability to sell its microcomputers effectively in this country, outside of its Intel Corp. 80386-based machine.

Moreover, Olivetti Chairman Carlo DeBenedetti is involved in s variety of business ventures and reportedly needed Cassoni back at Olivetti to tend to daily operations at the $6 billion company.

Bart Stuck, an analyst with telecommunications market research firm Probe Research, Inc., said the odds on AT&T's remaining in the computer business are still 50-50.

"There's no amazing technology to make them successful; there's no pulling s rabbit out of s hat to prevent them from failing," Stuck said.

"Kavner's made s strong commitment to the business; I don't see why he can't break even by the 1989 to 1990 time frame, based on the strategy that is already in place," he said.

Foreign sales

CONTINUED FROM PAGE 69

market, which still offers room for expansion."

Other companies reporting results included the following:

Compaq. Continued acclaim and purchases of its line of Intel Corp. 80386-based PCs helped the Houston-based company continue its astronomical growth rate. Both revenue and net income more than doubled over year-earlier results.

"They simply blew away my estimates," First Boston's Wolf said. "Their international sales continued very strong, and I feel they can sustain a 30% to 40% international growth rate over the next year. IBM's high-end Personal System/2 Model 80 still has not hurt Compaq. I'd say they have a good shot at reaching $2 billion in sales this year."

Stratus Computer, Inc. The introduction of low-cost entries to its line of fault-tolerant computer systems helped the Marlboro, Mass., vendor continue its recent strong growth with healthy gains in both revenue and net income over year-earlier results.

In addition, the company benefited from the Big Blue shadow across its doors. "Their OEM relationship with IBM is building, and I think that's what we're seeing here," said Melinda Reach, vice-president of research at Merrill Lynch & Co. "IBM is a big customer that has increased their shipments sharply. That's a lot to get for a small company such as Stratus."

Tandem Computers, Inc. A healthy sales clip in Tandem's international sector helped shine up lackluster domestic figures and keep profits growing at a respectable 26% over the year-earlier quarter.

"Tandem has seen s slowdown in the spending for high-end systems by big U.S. customers like the brokerage houses, but their international sales have been extremely strong, growing more than 50% in the quarter. I think this is the area they'll be concentrating on," said Lawrence M. Harris of Bateman, Eichler, Hill Richards, Inc.

Revenue growth for the Cupertino, Calif., maker of on-line transaction processing systems was also bolstered by sales from the recently acquired Integrated Technologies, Inc. and Ungermann-Bass, Inc. The two companies together contributed more than $13.5 million to quarterly revenue.

Control Data Corp. The Minneapolis-based company continued to experience problems — a slackening of sales in the Computer Systems and Services Group helped create only modest revenue growth — and Chairman and Chief Executive Officer Robert M. Price promised more of the same.

"With stronger selling efforts in 1988, Control Data should achieve improved revenue growth and earnings, but we do not anticipate significant profit growth, however, until the latter half of 1988," he said in a statement.

But some analysts were more optimistic about CDC. "Their ETA supercomputer will start to ship in volume this year, and when it picks up steam, we'll begin to see a lot more revenue for the company," said Gerard F. Hallaren, vice-president at Smith Barney, Harris Upham & Co.

Hogan Systems, Inc. Chairman and Chief Executive Officer Gary W. Fiedler blamed accounting changes and an increase in expenses related to software development as contributing to a 66% drop in net income and a 12% drop in revenue over year-earlier results.

For the fiscal year ended March 31, Hogan's earnings before extraordinary credits plunged 81% from $5.2 million to $1 million. Total revenue fell from $48.3 million to $48.7 million, but revenue from new software licenses fell significantly by 19% to $15.4 million.

Management Science America, Inc. After completing a difficult 1987 that included staggering losses due to accounting changes, MSA posted a small rebound in the first quarter. The Atlanta-based mainframe applications vendor earned $2.4 million, or 14 cents per share, on revenue that climbed 18% to $62.9 million. Revenue from new software licenses also rose 18% to $28.6 million. In the year-earlier quarter, MSA lost $2.3 million from operations but added a $69.9 million loss from accounting changes.

Computer Sciences Corp. The systems integrator reported a successful fourth quarter and fiscal year. For the year, profits rose 35% to $43.5 million on a 12% revenue gain to $1.15 billion. Fourth-quarter earnings were up 28% on a 6% gain in sales to $309.1 million.

1988 Computerworld SPOTLIGHT Sections

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▶ May 23	Data Communications	May 6	
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IN COMPUTERWORLD SPOTLIGHT

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COMPUTERWORLD

An IDG Communications Publication

COMPUTER CAREERS

The education of an expert

Four examples show the path to guru status can be unpredictable

BY ALAN RADDING
SPECIAL TO CW

There is a joke that describes a computer consultant as any professional in the industry who has been out of work for three months.

That may be an exaggerated characterization, but circumstance seems to have played a role in the career paths of some leading authorities on the use of information technology, particularly in the microcomputer arena. Some experts offset a lack of extensive technical training by taking advantage of their general analytical ability.

Computer consultants can be divided into four categories: analysts, implementers, researchers and commentators.

In general, analysts study new technologies and develop strategic implementation plans. Implementers help launch new technologies. Researchers track and analyze market data. Commentators develop a broad overview and provide insights into directions and trends.

Patricia Seybold, president of Patricia Seybold's Office Computing Group in Boston, is an analyst. "I got my start through nepotism," she quips. Seybold went to work for her father and brother, both industry analysts. As office automation emerged as a distinct field, she decided to follow it. "I started with word processing, which evolved into office automation," she says.

Liberal arts valuable

Except for a brief stint shuffling data processing punch cards at a bank, Seybold lacks a technical background. "I got my degree in comparative literature. It taught me how to analyze," she says.

Becoming a top consultant was not difficult, because the field was moving rapidly. "You didn't have to have a lot of background. You had to be able to ask intelligent questions," Seybold says.

Shaku Atre is an implementer. After 14 years in a variety of technical areas at IBM, she left to establish Atre International Consultants in Rye, N.Y., now known as Atre Computer Assistance.

Atre believes the key to her success is her hands-on IBM technical experience, which she says gave her a good grasp of the technical details. "I reached the stage where I could solve [technical] problems over the phone," Atre recalls. "You cannot talk about a product unless you work with it."

But IBM experience alone does not account for achievement as a consultant. "You must go beyond your job. You must create opportunities," she says.

While at IBM, Atre published a book on data base design that attracted her first client, AT&T, and she taught at local universities.

Her published works and teaching experiences are the foundation for the 50 courses and seminars she now leads.

JoeAnn Stahel is a researcher. A founder and principal of Storeboard, Inc., a Dallas-based research firm that tracks computer sales through specialty stores, she says she cannot quite believe she is a frequently cited authority.

In 1981, when she received a master's in education after raising several children, she set off to pursue a career in education. She focused on educational testing and measurement, which provided her with the statistical skills she now applies to her computer industry research.

The personal computer explosion in 1983 got her hooked on computers, and she landed a job at Future Computing, Inc., a large computer industry research firm. When the PC industry slumped in 1985, she left Future Computing and helped set up Storeboard.

When people think of the ideal systems consulting job, John Connell's probably is what they imagine. Connell serves as a commentator as executive director of the Office Technology Research Group (OTRG) in Pasadena, Calif., which he founded 11 years ago. Prior to that, he spent 15 years at Atlantic Richfield Co. He got started in the computer industry at Burroughs Corp. in 1955.

OTRG is a computer systems think tank. Through it, the top computer managers of member companies meet twice a year to discuss future trends and directions. Connell sets the agenda, leads discussions, writes extensively and publishes OTRG's newsletter.

He believes there are great opportunities for new consultants in mastering new technologies and helping companies develop and implement OA programs. "I think there is a marvelous opportunity in the integration of image processing with DP," he suggests.

Seybold agrees. "The field is far from saturated," she says. "There is a big need for implementation consultants. There are millions of PCs, and there is a lack of infrastructure to manage them. Companies don't have the manpower for project planning."

Top dollars for top talent

These opportunities can provide good money for top prospects. Large consulting firms pay new recruits with an MBA from a leading school salaries of up to $70,000. Salaries for experienced management consultants regularly top $100,000. Of course, a lone consultant, starting out on his own, probably will not earn that kind of money.

There are other rewards, a "personal return," as Connell says. "I enjoy operating in a much broader arena than I did when working for one firm."

So you want to be a consultant? Here are some tips from the experts. Focus on a specific area, preferably an emerging technology. Pick the type of role suited to your abilities (implementers and analysts are in the greatest demand). Gain exposure by getting published and cited in publications. And be willing to take risks.

FOCUS ON A SPECIFIC area, preferably an emerging technology. Pick the type of role suited to your abilities. Gain exposure by getting published and cited in publications. And be willing to take risks.

Radding is a Boston-based author specializing in business and technology.

DATA PROCESSING

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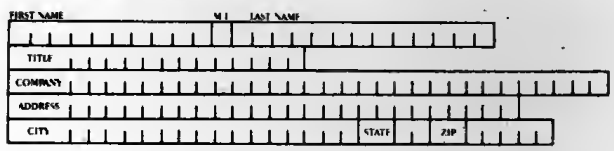

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Requirements include 7-10 years experience with major systems development, project leadership and business system planning, preferably from a large retail organization. An advanced degree in business or MIS is preferred.

SENIOR SYSTEMS ANALYST - DEVELOPMENT
Requirements include 5-7 years system development experience. Significant exposure to IMS and/or DB2 required.

PROGRAMMER ANALYST - SYSTEM SUPPORT
Requirements include 1-3 years COBOL programming/problem solving experience with batch and on-line systems.

PROGRAMMER ANALYST - INFORMATION CENTER
Provide analysis and support for Information Center projects, including DB2 conversion. Requirements include 2-5 years COBOL programming experience in a large scale, IBM environment.

DHDSC is a progressive operating company of one of the largest retail organizations in the country, the Dayton Hudson Corporation. We offer a very competitive salary and a work environment conducive to your personal growth and development.

Qualified applicants please send a resume, including salary history to: M. Tracy, Executive Placement/062, Dayton Hudson Department Store Company, 700 Nicollet Mall, Minneapolis, MN 55402. Equal Opportunity Employer.

DAYTON HUDSON
DEPARTMENT STORE
COMPANY

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UNIX APPLICATION DEVELOPERS – Experience with device drivers, PS2/80, C.

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SYSTEMS 38
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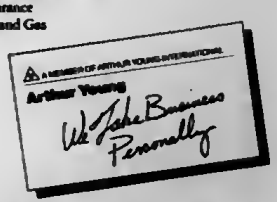

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Position requires a PhD degree in computer science, expertise in dataflow systems as demonstrated by publications. Extensive experience in processor and computer system design, demonstrated by participation in the design of a significant system, and a familiarity with compiler and operating systems design. Research experience in functional languages is highly desirable. **Job No. 888-866.**

LABORATORY OF COMPUTER SCIENCE
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Research Associate to work on the development of dataflow graph interpreters. This includes extending and maintaining the existing GITA code for Texas Instruments and Symbolics Lisp Machines, and Sun workstations. The existing code must be updated to run on new releases of vendor software and extended to add new and updated features. The existing code will also be ported to other workstations, and possibly to Cray supercomputers. This includes the port of GITA from Lisp into C. The development work will also include the development of new dataflow graph interpreters. In addition, the position involves the design and implementation of the I/O system software for the Monsoon dataflow machine, including participation in identifying the hardware configuration of the I/O system. The primary work involves developing device drivers and other system programming tasks for the I/O processors of Monsoon. This work will be done in C for a Unix operating system.

Position requires an advanced degree (MS or PhD) and extensive related experience. Direct experience in developing operating systems and resource managers is required. Extensive experience with C and Unix, as well as Lisp is required. Research experience in functional languages and dataflow is highly desirable. **Job No. 888-867.**

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Position requires a PhD in computer science and extensive experience in compiler development and compiler optimizations for functional languages as demonstrated by publications. Familiarity with dataflow is highly desirable. **Job No. 888-868.**

Please send two copies of resume and cover letter, referencing job 888-866, 888-867, or 888-868, to: James H. McCarthy, MIT Personnel Office (E19-238), 400 Main Street, Cambridge, MA 02139. MIT is a non-smoking environment.

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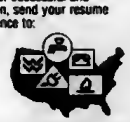

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MARKETPLACE

Worldly personal computers

Demand for IBM PC AT, Compaq Deskpro 286 spans the globe

BY CAMERON HALL
BOSTON COMPUTER EXCHANGE CORP.

Contacts from the other side of the world indicate that the Soviets are getting ready for glasnost to assimilate the information revolution. Despite the lack of hard currency, an increasing number of Eastern bloc buyers are expressing interest in buying older model personal computers from the secondary market.

Although the U.S. Department of Commerce still requires an export license to take an antique 1981-model PC out of the U.S., Soviet buyers are willing to wade through the red tape to get s "thought appliance" into their country.

"I really want an IBM, but I'd take any chip off the Eastern bloc," one Czechoslovakian buyer said. What could be better for America than to export this technology? It is like seeding the world with s technology that fosters the freedoms of the First Amendment.

Where are those ATs?

The velocity of trade on the Boston Computer Exchange Big Board took another leap during the week ended April 22, as buyers and sellers could view the exchange's data base on Compuserve. More than 400,000 Compuserve users are now able to search for bargains and post their equipment for sale. Among the first questions over the electronic mail lines was "Where are the IBM Personal Computer AT Model 339s?"

IBM demand was met with supply, as the last of the PC XT and AT lots from IBM began to filter through the market, and prices were down as s result. The XT Model 089 fell $50 to close at $1,650, and the ATs were also down across the board.

The early PC and PC XT models and the Personal System/2s continued to trade at last week's prices. Volume lots of IBM hardware also became available from corporate and government offices, and they quickly found new homes in large corporate installations with custom hardware and software that require true Blue AT equipment.

The Compaq Computer Corp. market was quiet. Compaq saw one gainer and two losers as all other models held steady at the previous week's close.

The ever-popular Compaq Portable I was up $25 to close at $825, remaining in the trading range of last month as it matched the IBM PC competition virtually machine for machine in sales.

The Compaq Portable II 20-MHz machine was down $50 to close at $2,100. There were bargains to be had, as the 20-MHz Deskpro provided great value selling down $100 at $1,400.

THE END OF THE college year is approaching, and the Macintoshes purchased for term papers suddenly look like an opportunity for cash.

Summer supply

Apple Computer, Inc. Macintosh market prices were stable under poor supply conditions all week, with buyers hoping student Macintoshes will come to market in volume in the next few weeks. The end of the college year is approaching, and the Macintoshes purchased for term papers suddenly look like an opportunity for cash.

Constrained by supply, the Apple Macintosh 512 was up $75, the 512E sold at the previous week's close, and the Mac Plus held its own just below new discounts. The Mac SE dropped slightly from last week's high to close down, at $2,375.

The Mac IIs are getting popular in the leasing market, as those with whole Macintosh departments lease high-end equipment, and prices were up $100 for the machines, which sold at $3,900.

The Boston Computer Exchange can be reached at 800-BOCOEXX or 617-542-4414 in Massachusetts.

The BoCoEx Index

Closing prices report for the week ending April 22, 1988

IBM PC Model 076	$825	$900	$600
XT Model 086	$1,225	$1,350	$900
XT Model 086	$1,650	$1,700	$1,125
AT Model 086	$2,350	$2,400	$1,875
AT Model 239	$2,650	$2,750	$2,150
AT Model 339	$3,650	$3,700	$2,750
PS/2 Model 50	$2,475	$3,650	$2,400
PS/2 Model 60	$2,650	$2,800	$2,475
[illegible]			
Apple Macintosh 512	$725	$750	$575
512E	$850	$1,075	$675
Plus	$1,150	$1,350	$900
SE	$1,925	$2,200	$1,600
SE 20-MHz	$2,375	$2,400	$2,100
II	$3,900	$4,200	$3,500
[illegible] Plus	$2,100	$3,000	$1,800
Hewlett-Packard Laserjet	$925	$925	$725
[illegible]	$900	$900	$700

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Sealed proposals will be received by the CDPA, 301 N. Lamar St., 301 Building, Suite 903, Jackson, MS 39201 for the following equipment and services:

Request for Proposal No. 1045, due Monday, May 30, 1988 at 2:30 p.m. for the acquisition of a new or refurbished replacement processor for the IBM System/36 in administration at COAHOMA JUNIOR COLLEGE. No charge.

Request for Proposal No. 1046, due Thursday, May 26, 1988 at 2:30 p.m. for the acquisition of 60 MS-DOS/OS/2-based microcomputers, printers, peripherals and software for the MISSISSIPPI STATE HIGHWAY DEPARTMENT. Charge $10.00.

Request for Proposal No. 1047, due Thursday, May 19, 1988 at 2:30 p.m. for the installation of an upgrade to an ADR Telstar XP for MISSISSIPPI LEGISLATIVE PERFORMANCE EVALUATION EXPENDITURE REVIEW COMMITTEE. Charge $10.00.

Request for Proposal No. 1048, due Tuesday, May 24, 1988 at 2:30 p.m. for the acquisition of a MS/DOS-based animation system with associated and downloadable capabilities for HINDS COMMUNITY COLLEGE. No charge.

Request for Proposal No. 1049, due Tuesday, May 31, 1988 at 2:30 p.m. for the acquisition of an upgrade and application for an existing Hewlett-Packard data acquisition and control system for the Magnetic Resonance Imaging Center at MISSISSIPPI STATE UNIVERSITY. No charge.

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Detailed specifications may be obtained free of charge from the CDPA office or at the specified cost by submitting a written request accompanied by the appropriate payment. NOTE: Valid forms of payment are corporate check on a Mississippi bank, certified check or POSTAL money order. NO CASH OR OUT-OF-STATE checks. The CDPA reserves the right to reject any and all bids and proposals and to waive informalities.

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NOTICE is hereby given that the Metropolitan Transportation Authority will receive sealed bids for the sale of the items listed below, and that the bids will be publicly opened and read at the date and time specified below at the MTA's offices at 347 Madison Avenue. Bids must be submitted on an inquiry form provided by the MTA. A copy of such form and the terms and conditions of sale may be obtained from Donald C. Nist, Manager of Contracts, Metropolitan Transportation Authority, 347 Madison Ave., NY, NY 10017.

INQUIRY NO.	DATE	TIME
4-01-50120-0	May 19, 1988	2PM

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Issue Date	Closing Date	Topic	Show Distribution
Jan. 6*	Dec. 4	Communications/ Connectivity	Communication Networks
Feb. 3	Dec. 31	Software Operating Systems & Languages	Uniforum
Mar. 2*	Jan. 29	Departmental Computing	Interface/ WCC
Apr. 6	Mar. 4	Data Security	
May 4	Apr. 1	Communications/ Connectivity	Comdex Spring/ ICA
June 1*	Apr. 29	PC End User Productivity	PC Expo
July 6	June 3	Software	
Aug. 3	July 1	Departmental Computing	
Sept. 7	Aug. 5	Communications	TCA
Oct. 5	Sept. 2	Software Productivity	Info '88/ Dexpo West
Nov. 2	Sept. 30	PC/Connectivity	Comdex Fall
Dec. 7	Nov. 4	Departmental Computing	

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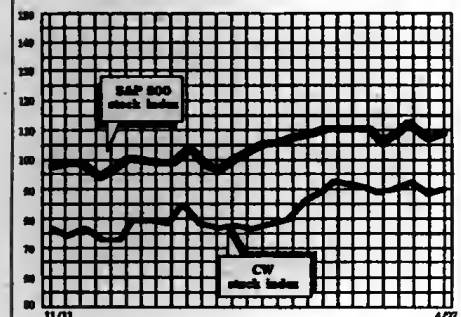


Indexes	Last Week	This Week
Communications	92.7	96.8
Computer Systems	99.3	103.0
Software & DP Services	98.3	99.6
Semiconductors	65.7	68.3
Peripherals & Subsystems	89.7	90.7
Leasing Companies	116.9	115.8
Composite Index	89.2	91.2
S&P 500 Index	107.0	110.2

CW CHARTS

Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, APRIL 27, 1988

EXCH		52-WEEK RANGE (1)		PRICE CLOSE APRIL 27 1988	WEEK NET CHNGE	WEEK PCT CHNGE
Communications and Network Services						
N	AMERICAN INFO TECHS CORP	100	74	89.50	4.4	5.1
O	ANDREW CORP	19	11	14.38	1.1	8.3
O	ARTEL COMM CORP	3	1	1.38	-0.3	-11.8
N	AT&T	36	30	35.63	0.1	0.3
O	AVANT GARDE COMP INC	9	2	2.00	0.5	33.3
O	AVANTEK INC	17	9	7.00	0.4	5.7
N	AYDIN CORP	35	19	21.38	-1.0	-4.5
N	BELL ATLANTIC CORP	80	61	67.13	2.6	3.9
N	BELLSOUTH CORP	44	28	39.50	1.8	4.3
O	COMPRESSION LABS INC	9	3	3.13	0.0	0.0
O	COMPUTER NETWORK TECH	9	1	1.38	0.0	0.0
O	CONTEL CORP	40	25	33.38	-0.1	-0.4
O	DATA SWITCH CORP	10	4	7.88	0.0	0.0
O	DIGITAL COMM ASSOC	48	30	32.88	2.0	6.8
O	DYNATECH CORP	33	14	22.75	-0.3	-1.1
O	FIBRONICS INTERNATIONAL INC	6	3	4.38	0.9	12.9
O	GANDALF TECHNOLOGIES	10	9	7.25	-0.1	-1.7
O	GENERAL DATACOMM INDS	14	3	4.00	0.4	10.3
N	GTE CORP	40	28	35.88	1.0	2.8
Q	INFOTRON SYS CORP	12	9	11.25	1.8	18.4
N	ITT CORP	38	42	48.63	1.8	2.8
O	M A COM INC	19	7	10.13	0.4	3.8
O	MCI COMMUNICATIONS CORP	14	9	13.63	0.6	4.8
O	MICOM SYS INC	17	7	15.75	3.3	24.1
O	NETWORK SYS CORP	13	7	9.88	1.0	11.8
N	NORTHERN TELECOM LTD	24	14	17.88	-0.7	-3.8
O	NOVELL INC	30	12	19.75	0.0	0.0
N	NYNEX CORP	78	58	64.50	2.1	3.4
N	PACIFIC TELESIS GROUP	34	23	28.88	1.5	9.9
O	PARADYNE CORP	6	4	4.50	-0.1	-2.7
A	PENRIL CORP	9	1	4.75	0.8	16.2
9	PLESSEY PLC	40	23	29.75	-0.3	-0.8
N	SCIENTIFIC ATLANTA INC	20	9	14.63	-0.4	-2.8
N	SOUTHWESTERN BELL CORP	49	32	35.75	0.9	2.5
O	3 COM CORP	28	12	13.63	1.0	8.4
N	TIMEPLEX INC	40	17	32.50	0.0	0.0
Q	UNGERMANN BASS INC	19	5	12.00	0.0	0.0
N	U S WEST INC	35	43	53.38	2.4	4.7
Computer Systems						
Q	ALLIANT COMPUTER SYS	38	9	7.00	-0.5	-6.7
Q	ALPHA MICROSYSTEMS	9	3	5.75	0.0	0.0
Q	ALTOS COMPUTER SYS	19	9	9.88	0.1	1.8
A	AMDAHL CORP	50	19	38.75	3.4	9.6
Q	APOLLO COMPUTER INC	30	9	15.00	0.6	4.3
Q	APPLE COMPUTER INC	30	28	41.75	2.0	5.0
N	BOLT BERANEK & NEWMAN	28	12	17.50	-1.1	-6.0
C	BRITTON LEE INC	9	1	2.13	0.3	13.3
N	COMPAQ COMPUTER CORP	75	34	52.88	1.8	3.2
Q	COMPUTER AUTOMATION INC	17	9	10.75	-1.1	-9.5
Q	COMPUTER CONSOLES INC	11	7	7.00	-0.4	-5.1
Q	CONCURRENT COMP CORP	24	11	17.50	-0.5	-2.9
N	CONTROL DATA CORP DEL	38	18	24.75	1.0	4.2
Q	CONVERGENT TECH	9	3	3.19	0.0	0.0
Q	CONVEX COMPUTER CORP	30	3	8.50	1.3	17.2
N	CRAY RESH INC	125	47	83.50	7.1	9.0
Q	DAISY SYS CORP	10	9	9.25	1.1	10.8
N	DATA GEN CORP	37	19	23.25	0.0	0.0
Q	DATAPOINT CORP	9	3	5.38	0.1	2.4
N	DIGITAL EQUIP CORP	200	99	106.75	6.0	5.7
9	FLOATING POINT SYS INC	13	3	4.13	-0.1	-2.9
N	GOULD INC	34	9	11.13	0.1	1.1
N	HARRIS CORP	43	22	30.00	0.4	1.3
N	HEWLETT PACKARD CO	74	38	62.63	1.0	1.6
N	HONEYWELL INC	91	48	70.88	1.8	2.7
N	IBM	175	102	114.00	1.1	1.0
Q	INFORMATION INTL INC	19	9	12.63	-0.1	-1.0
Q	IPL SYS INC	3	1	2.00	0.4	28.1
Q	MASS COMPUTER CORP	14	4	5.00	0.4	8.9
N	MITSUBISHI ELEC INDL LTD	228	103	221.00	-0.3	-0.3
Q	MEGADATA CORP	9	3	2.13	0.1	4.2
Q	MENTOR GRAPHICS CORP	38	14	20.75	2.5	8.3
N	NBI INC	14	4	5.13	-0.3	-4.7
N	NCR CORP	67	30	62.38	2.5	6.2
N	PRIME COMPUTER INC	31	13	17.38	0.8	4.8
Q	PYRAMID TECHNOLOGY	14	9	13.25	1.8	10.4
Q	STRATUS COMPUTER	41	15	28.00	3.0	12.0
Q	SUN MICROSYSTEM INC	49	14	30.25	-0.8	-2.4
Q	SYMBOLICS INC	9	1	1.75	0.5	0.0
N	TANDEM COMPUTERS INC	37	19	18.88	2.1	12.7
N	TANDY CORP	57	28	48.75	2.9	6.1
N	ULTIMATE CORP	37	13	12.88	-0.3	-4.6
N	UNISYS CORP	49	24	34.50	2.1	6.6
A	WANG LABS INC	19	10	11.38	-0.1	-1.1
Software & DP Services						
Q	ADVANCED COMP TECH	9	1	1.50	0.0	0.0
N	ADS COMPUTERS INC	30	11	17.00	-0.4	-2.2
Q	AMERICAN MGMT SYS INC	20	9	15.75	0.4	3.4
Q	AMERICAN SOFTWARE INC	20	9	13.38	0.4	2.9
N	ANACOMP INC	11	4	8.88	0.1	1.4
Q	ANALYSTS INTL CORP	10	4	8.00	0.9	10.9
Q	ASHTON TATE	33	13	27.75	0.0	1.8
Q	BGS COMPUTER SYS INC	14	9	14.00	0.0	1.8
Q	AUTODESK INC	34	12	28.25	2.5	13.5
N	AUTO DATA PROCESSING	38	18	40.88	0.0	0.0
Q	BOOLE & BABBAGE INC	12	5	7.75	0.0	0.0
N	COMPUTER ASSOC INTL INC	37	19	27.13	0.4	1.4
Q	COMPUTER HORIZONS CORP	19	7	10.88	-0.3	-2.2
N	COMPUTER SCIENCES CORP	73	42	43.75	1.8	2.9
N	COMPUTER TASK GROUP INC	17	9	11.50	0.0	0.0
Q	COGNOS INC	17	4	7.13	0.0	0.0
Q	COMSHARE INC	28	12	16.75	-0.3	-1.8
Q	CULLINET SOFTWARE INC	14	4	7.88	0.9	12.5
Q	DUQUESNE SYS INC	30	10	20.00	0.5	2.5
A	DATA ARCHITECTS INC	19	7	12.75	0.0	0.0
9	GENERAL MTRS (CLS E)	91	20	43.00	1.8	4.2
Q	HOGAN SYS INC	17	4	4.25	0.0	0.0
Q	INFORMIX CORP	31	12	21.00	1.4	7.0
Q	INTELLICORP INC	22	9	3.00	0.0	0.0
Q	KEANE INC	11	9	10.88	1.0	10.9
Q	LOTUS DEV CORP	40	19	22.75	-0.3	-1.1
Q	MANAGEMENT SCI AMER	15	5	9.13	0.9	10.2
Q	MICRO FRD INTL CORP	9	7	7.88	0.0	0.0
Q	MICROSOFT CORP	75	37	55.50	1.0	1.8
Q	MORINO ASSOCIATES INC	24	7	19	0.4	2.4
Q	NATIONAL DATA CORP	34	15	28.13	-0.3	-2.6
Q	ON LINE SOFTWARE INTL INC	22	9	9.88	0.0	0.0
Q	ORACLE SYS CORP	19	9	15.75	0.3	1.8
N	PANSOPHIC SYS INC	28	11	19.00	-0.4	-2.2
Q	POLICY MGMT SYS CORP	28	19	24.12	0.9	3.8
Q	PROGRAMMING & SYS INC	14	7	12.25	0.9	2.1
N	REYNOLDS & REYNOLDS CO	38	14	17.63	-2.5	-13.5
Q	SEI CORP	19	10	15.00	-0.3	-1.4
Q	SHARED MED SYS CORP	51	19	33.63	-0.1	-0.3
Q	SOFTWARE AG SYSTEMS INC	14	7	7.00	0.0	0.0
Q	SOFTWARE PUBG CORP	17	5	15.38	-0.3	-8.4
A	STERLING SOFTWARE INC	12	6	8.00	0.0	0.0
Q	SUNGARD DATA SYS INC	21	10	17.75	0.9	2.5
Q	SYSTEMATICS INC	22	19	20.75	0.0	0.0
N	SYS. SOFT INC.	34	7	19	-1.5	-8.4
Q	VM SOFTWARE INC	40	7	13.00	-0.3	-1.8
Semiconductors						
9	ADV MICRO DEVICES INC	28	9	14.25	1.8	14.0
N	ANALOG DEVICES INC	24	9	14.00	0.9	6.7
Q	ANALOGIC CORP	13	5	7.25	-0.1	-1.7
Q	INTEL CORP	42	19	32.25	1.0	3.2
Q	LSI LOGIC CORP	17	7	8.88	0.1	1.8
N	MOTOROLA INC	74	36	49.13	2.5	5.4
N	NATL SEMICONDUCTOR	22	10	13.50	1.4	11.8
N	TEXAS INSTRS INC	60	28	48.50	-0.8	-1.6
A	WESTERN DIGITAL CORP	22	11	13.50	1.0	8.8
Peripherals						
Q	ALLOY COMP.	12	3	4.13	0.4	10.0
N	AM INTL INC	9	3	3.63	-0.3	-8.3
Q	AST RESH INC	21	6	13.00	-0.8	-5.9
Q	AUTO TROL TECH CORP	9	3	4.75	0.1	2.7
Q	BANCTEC INC	18	9	6.25	0.0	0.0
Q	CIPHER DATA PRODS INC	14	4	12.25	0.0	-0.3
A	COGNITRONICS CORP	9	3	3.88	0.6	18.2
N	COMPUGRAPHIC CORP	28	19	26.00	0.3	1.0
A	DATAPRODUCTS CORP	24	7	10.00	0.0	0.0
A	DATARAM CORP	9	3	3.75	-0.1	-1.8
N	DECISION INDS CORP	12	4	10.75	0.0	0.0
N	EASTMAN KODAK CO	71	38	41.00	1.0	2.5
Q	E M C CORP MASS	28	7	7.50	-0.3	-15.5
Q	EMULEX CORP	9	4	9.00	-0.1	-1.8
Q	EVANS & SUTHERLAND	35	17	17.75	-0.8	-3.4
Q	ICOT CORP	6	3	3.31	-0.3	-9.3
Q	INTERLEAF INC	24	11	17.38	-0.3	-4.6
Q	IOMEGA CORP	9	1	3.38	-0.2	-5.3
Q	LEE DATA CORP	9	3	3.75	0.1	3.4
Q	MAGISTOR SYS CORP	9	1	3.13	0.0	0.7
Q	MAXTOR CORP	33	9	18.50	0.0	0.0
Q	MICROPOLIS CORP	44	18	28.00	1.3	4.3
Q	MINISCRIBE CORP	19	9	12.00	0.5	4.3
N	MINNESOTA MNG & MFG CO	84	49	60.13	1.3	2.1
A	MSI DATA CORP	19	9	16.25	-0.3	-1.5
Q	PERSONAL COMPUTER PRODUCTS INC.	7	4	6.13	0.0	0.0
Q	PRIAM CORP	9	1	2.13	0.1	9.9
Q	PRINTRONIX INC	12	7	8.63	-0.3	-2.8
Q	QMS INC	27	9	11.00	0.9	8.8
Q	QUANTUM CORP	28	9	11.00	0.0	0.0
Q	RAMTEK CORP	9	1	1.25	0.0	0.0
N	RECOGNITION EQUIP INC	22	7	9.13	0.4	4.3
Q	REXON INC	14	9	8.50	0.4	4.6
Q	SCAN TRON CORP	17	7	16.38	0.0	0.0
Q	SEAGATE TECHNOLOGY	48	10	20.50	2.1	11.8
N	STORAGE TECH CORP	9	1	1.75	0.1	7.7
Q	TANDON CORP	7	1	2.63	0.4	16.7
A	TEC INC	7	3	4.75	0.0	0.0
9	TEKTRONIX INC	41	21	24.63	-0.8	-2.5
Q	TELEVIDEO SYS INC	3	1	1.81	0.1	9.0
N	TELEX CORP	53	20	40.25	-1.4	-4.8
Q	WYSE TECH	40	11	20.00	0.9	4.8
N	XEROX CORP	28	30	64.13	1.0	1.9
Q	XIDEX CORP	16	9	6.25	0.1	2.0
Leasing Companies						
Q	CAPITAL ASSOCIATES INTERNATIONAL INC	11	4	4.50	-0.4	-7.7
9	COMDISCO INC	37	12	31.38	0.1	0.3
N	CONTINENTAL INFO SYS	14	9	7.63	-0.1	-0.8
Q	PHOENIX AMERN INC	9	3	5.00	0.1	4.3
Q	SELECTERM INC	9	3	4.25	0.0	0.0

EXCH: N—NEW YORK; A—AMERICAN; Q—NATIONAL; O—OVER-THE-COUNTER; S—SPLIT

O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

Get set, go!

DEC out in front as high-tech stocks take market lead

Computer stocks were up and running last week, outpacing a steadily favorable market that ended curiously Thursday with the slowest trading session this year. Digital Equipment Corp. posted the most significant gain of the week among leading issues. DEC's stock caught fire following news that the firm will market software on a laser disk, ending the four days of trading up 6¼ points to 106.

Healthy gains were also posted by Micom Systems, Inc., up 3¼ points to 17 following news that it has received takeover offers it plans to pursue (see story page 69), and MAI Basic Four, Inc., which gained 3½ points to 18½ following an announcement that two principal shareholders will sell their shares.

Other top gainers for the week included Stratus Computer, Inc., up 2¾ points to 27⅛; Cray Research, Inc., up 2½ points to 84⅛; Tandem Computers, Inc., up 2¼ points to 18¾; and Amdahl Corp., up 2 points to 39¾. The few losers on the Street included Computer Associates International, Inc., down 1½ points to 25¾; Sun Microsystems, Inc., off 1 point to 35¾; and IBM, down ⅛ of a point to 113¼.

JAMES DALY

Compatibility

FROM PAGE 1

and marry. For couples in MIS, job stress, erratic travel schedules and management frustrations are all just a part of daily living.

"There are more of us than you think," stresses one systems analyst at AT&T. "Really, there are."

At one time, the Chevron Information Services Group was getting so large, former MIS director Charles Oldenburg recalls, that top management was worried about what to do with the proliferation of romances that were springing up in the department.

"We never allowed one person to work for his or her spouse," he says. "These relationships made our decisions to transfer one person to another state very complex."

Carl and Janice Coulter

Aside from user companies, MIS marriages can also be found in professional MIS groups such as the Data Processing Managers Association (DPMA).

"If I were to call up all of our chapters, I bet I could find at least six couples in each one, and then they would know of others," says John Venator, DPMA executive director.

Keeping it at the office

Couples in the field admit they have to shake off some stereotypes. To outsiders, "MIS romance" evokes visions of two extremely unemotional beings who come home only to log on to the computer in the den. Conversations in the household would focus on the merits of VTAM and VMS.

When people find out that Hammitt and Pisani are both in MIS, "they must think our lives must be boring," Hammitt says. "But we rarely talk about technology at home. And we don't have a computer."

In fact, couples interviewed find it a relief that their spouses can understand what they do.

"My first husband just couldn't relate to my problems," one MIS director confides. "My second is in MIS, and we get along just fine."

When husbands or wives are familiar with the intimate details of a job, they find it easier to comfort the other person.

Larry and Dorothy Deran both work in Palo Alto, Calif., as MIS directors. Larry heads the operations at office supplier Tab Products Co., and his wife works as the director of resource information systems at Syntex Laboratories, Inc.

"You tend to be more sympathetic about each other's pressures," Dorothy notes.

Others agree. "You know, there are some jobs that are just not universally understood," says Janice Coulter, information management specialist for AT&T's MIS operations. "Being in MIS is both technical and, therefore, somewhat confusing for people."

Janice often shares ideas with her husband, Carl, a systems analyst at McGraw-Hill, Inc.

In his job, he helps the company select and maintain IBM mainframe-based financial software.

"This is my first time in a large MIS shop," she says. "Being at McGraw-Hill, he's used to it. So Carl is helping me understand how to move around in a huge shop."

Not always rosy

While a natural compatibility exists, there is plenty of room for tension. Years ago, Bev Madron taught MIS at Western Kentucky University, and her husband, Tom, worked there as the director of academic computing.

"She looked at how technology should be implemented from a philosophical viewpoint, while I looked at technology from a practical one because I had control over operations," he recalls. "Yes, we've had some pretty strong arguments over technology issues and issues relating to the direction of the industry."

Carole and David Benbassat

And now their roles have changed. She is the associate director of information services at the Newark, N.J., campus of Rutgers University. He is president of the New Jersey Educational Computing Network, Inc., a company that provides computer and consulting services to schools.

Experience has taught them to share technical expertise only when asked. "We tend not to get overbearing," Tom says. "One is very cautious about offering gratuitous advice to the other."

Staying independent

For many couples, the question of whether either would like to work for the other spouse sets heads shaking.

"No," Pisani says flatly. "We respect each other professionally, but I would not want to work for John. I'd be willing to work on a project for a little while with him, but not for him."

Her husband immediately concurs. Their management styles are different, he explains. "I focus on the long term, how Pillsbury can influence the rest of the industry, how we are to stay competitive," Hammitt says. "She looks at the present, what must be done now to make things happen. She sets high standards, but I'm more comfortable with flexibility. I doubt we would ever be able to work together."

With first-hand knowledge of what MIS management entails, one spouse can share the joy when the other has successfully implemented a new IBM 9370 or when he or she receives a congratulatory letter for building a strong MIS department. They can respect each other as professionals and help solve technical and managerial problems without a spirit of competition.

On the road again

Yet, with long hours coupled with rigorous travel schedules, the stresses of MIS can be overwhelming. Last year, Hammitt and his wife traveled so much for their jobs that they often arranged to meet each other in midpoint cities on the weekends.

Joanne Pisani and John Hammitt

Nancy Bradley, former president of her local DPMA chapter, and her husband, Gary, can attest to radical work schedules. Nancy trains data processing teachers in Las Vegas. Gary works in Denver at Covia, Inc., the United Airlines technology subsidiary, as a systems programmer analyst. They are rapidly racking up frequent-flyer miles as they fly to meet each other every week.

"I rather enjoy this schedule," Nancy says. "A lot of people in this field don't get to see a lot of each other on the weeknights anyway. We've been married 29 years, and now every weekend is like a honeymoon."

For some, being married to an MIS spouse can be socially limiting. Meeting each other's work friends also means meeting another colleague in the business.

"We find that we tend to meet fewer people in other fields," notes David Benbassat, an MIS consultant whose wife, Carole, trains other MIS managers. "Most of our friends are in the computer field in one way or another."

Many of the couples say they probably talk more about work at home than they should. They must make a conscious effort to draw the line between business and pleasure. But, for some, technology is a hobby. "Yes," Bev Madron admits. "We do talk about VAXs and IBMs at home."

Having similar jobs does not strike these couples as strange or even as an issue that comes up very often. For Hammitt and Pisani, their other shared interests — exercise, cultural activities, cooking and travel — make for balanced and well-rounded lives.

"We don't consider ourselves technologists," Hammitt stresses. "We are business people in the business of managing technology. We would have a lot in common with executives in other industries."

For love's sake

When both husband and wife are highly successful, moving to another MIS position in another part of the country is commonplace. And, in many cases, both people's careers will not move in parallel when one relocates for the other. That means sacrifice.

Joanne Pisani was at the top of the MIS totem pole at Avon Products, Inc. in New York. But when she married Chicago-based John Hammitt, she made the decision to relocate and work at an Avon branch in an MIS capacity as a line manager. It was a move down, not up, the corporate ladder — not an easy transition.

"You have to understand the consequences of your actions before you do something like this, because a lot of resentment can build up afterward," she warns. "It was more important for me to live in the same house with my husband than to live apart and commute to see each other. It all boils down to your value system."

Pisani also emphasizes that her husband said he would be willing to move for her if she ever got an irresistible job offer out of state.

For couples who are wedded to their jobs, maintaining a marriage while living apart is an alternative.

"I never told him not to go," says Nancy Bradley, a data processing trainer in Las Vegas. "But I love my job." So when her husband, Gary, got a job as a programmer/analyst at Covia, Inc. in Denver, Nancy stayed put. She says she likes the lifestyle of Las Vegas and does not care much for Denver's cold winters.

So far, their marriage of 29 years has fared well, but it was rough at the start, she acknowledges. Before his job relocation, they had never been apart for more than three days at a time. She was not used to being alone at night or taking care of all the household responsibilities. On top of that, they must now pay to live in two places.

"We talk on the phone every day and see each other on weekends," she says. "Now that I have gotten used to it, I rather enjoy this schedule."

KATHY CHIN LEONG

No surprises expected this time around

BY ALAN J. RYAN
CW STAFF

ATLANTA — Dealers heading to the Peachtree State next week for Comdex/Spring '88 are expecting little in the way of product announcements and look forward to a relatively relaxed atmosphere.

When the spring version of The Interface Group's trade show opens its doors Monday, few hot announcements are anticipated.

Recent interesting rollouts, like the IBM Personal System/2 compatibles from Texas-based Tandy Corp. and Dell Computers/PCs Limited, will likely draw crowds, but it is unlikely that anything announced at the show itself will top them.

Dennis Scarfile, owner of Computerworks, Inc. in Annapolis, Md., said his store will not be represented at the show because he has not heard of any interesting products.

"When there is a giant step forward in the industry, like 386 machines or laser printers, we go," Scarfile said. "But s lot of the Comdex shows now are flat."

In search of a printer

Three members of the Upgrade for Computrements staff in North Olmsted, Ohio, will be attending the show, according to Upgrade owner Jim Madigan.

They will be looking for s second laser printer line to carry — the stores now have Hewlett-Packard Co. machines on their shelves — and a cost-effective laptop.

Mostly, though, Madigan conceded, the trip to Atlanta is an "R&R" perk for his workers. "They don't learn that much at the show. We just use it for the guys to get out, have fun and see a lot of products. It's hard to prove that it pays off," he added.

For Glenn Paul of Clancy-Paul & Associates in Cranbury, N.J., there are other reasons to attend. "I've long since stopped going to Comdex to look for products," he said. "I mostly go to meet people I don't get to see in the course of business and to think about my product strategy."

Hobnobbing

Paul said the show offers the ability "to focus on products for a week, rather than one product at a time as you do in the normal course of s day." He added that the show is a place for establishing and maintaining relationships with vendors.

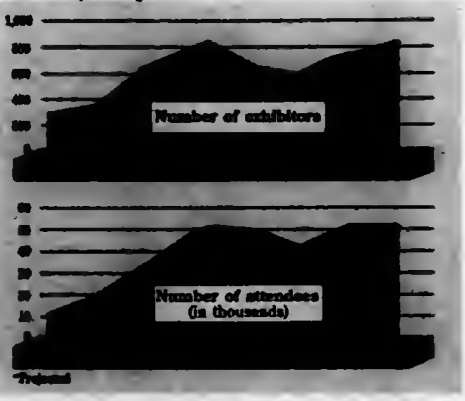
Paul said the size of the spring show, which is considerably smaller than its Las Vegas sister that takes place in the fall, creates an easier atmosphere in which to conduct business.

But to some Comdex diehards, the spring show isn't the real thing. "Las Vegas is where it's at," said Tom Jacobs, chairman of Computer Town in Nashua, N.H. "That's where it got started, and the better introductions are there."

Some 850 vendors are expected to fill 4,000 10-by-10-foot booth units, an Interface spokeswoman said. Attendance is projected at 52,000.

March on Atlanta

Comdex/Spring '88 organizers project the number of exhibitors will reach the peak attained in 1984 and that attendance will remain the same as last year's high



INFORMATION PROVIDED BY THE INTERFACE GROUP, INC.
CW CHART

The Tandy/Dell show

PS/2 at center stage; PC compatibles pull up rear

ATLANTA — IBM's Personal System/2 family and Micro Channel architecture-compatible systems from Tandy Corp. and Dell Computers/PCs Limited are expected to be drawing cards at Comdex/Spring '88 here next week. However, systems compatible with IBM's Personal Computer line are also among the rollouts expected at the show.

Some systems, cards and terminals users can expect to see next week include the following:

• San Jose, Calif.-based Chips and Technologies, Inc.'s 20-MHz New Enhanced AT, or Neat chip set. The company currently offers 16- and 12-MHz versions. The speedier version is shipping now and is included in the recently announced Zenith Data Systems Supersport 286 laptop and the 220 Delta from Dell. The chip sets run IBM's and Microsoft Corp.'s OS/2 and Microsoft's MS-DOS operating systems and application software.

• Acer Technologies Corp.'s venture into the lower end of the PS/2-compatible market. The Acer 1030 is said to be compatible with the PS/2 Model 30 and supports both 3½- and 5¼-in. floppy disk drives. It comes with 640K bytes of on-board random-access memory, four open eight-bit IBM PC XT-compatible expansion slots and multigraphics display capability. It will be priced at less than $1,400.

Acer will also announce the Acer 915, an IBM PC AT-compatible machine running at 12.5 MHz and selling for less than $2,300, and the Acerserver 5200, an Intel Corp. 80386-based server configured with Novell, Inc. Netware Version 2.11 software. The server will be available in either 70M- or 130M-byte hard-disk versions and will sell for less than $9,000.

• Vendex Technologies, Inc.'a line of Headstart computers. The Headstart II is a 9.54-MHz, 640K-byte PC XT compatible featuring one 5¼-in., 360K-byte floppy and one 3½-in., 1.44M-byte floppy disk drive. Its price is $1,195.

Headstart II Plus adds s 32M-byte hard disk drive, s 2,400 bit/sec. modem and s mouse to the Headstart II; it will sell for $2,195.

Also from Vendex, Headstart III is based on Intel's 80286 processor and features 1M-byte built-in RAM, expandable to 2M bytes. It will sell for $2,595. The company's 16-MHz 80286-based Headstart Pro features bundled OS/2. With the addition of two chips, it can be transformed to a 20-MHz 80386-based machine. It will sell for $3,995. All units are scheduled to begin shipping in August.

• Tandon Computer Corp.'s Tandon 286 is set to make its debut st Comdex. The computer offers a 12-MHz 80286 microprocessor, eight expansion slots, a fixed 60M- or 110M-byte Winchester disk drive and a 1.2M-byte floppy. The Tandon 286's Personal Data Pac allows the Winchester drive to be removed and ported. Pricing was not available at press time.

• Sunnyvale, Calif.-based Advanced Transducer Devices, Inc.'s 80386 accelerator board, the 386 ATD, which will reportedly allow users to turn any computer based on Intel's 80286 microprocessor into an 80386 machine. The board is compatible with OS/2, the company said. The system's price is $1,295, and an 80-pin connector lets the user add up to 4M bytes of expansion memory.

• The AOX PS/2 processor upgrade card from AOX, Inc. in Waltham, Mass. The card is designed to work with the PS/2 line to upgrade it to the 80386 microprocessor. The card for the 80286-based PS/2 models will be available in 16-, 20- and 25-MHz versions, providing two to four times the performance of the PS/2 Models 50 and 60. Prices have not been set.

• Norcross, Ga.-based Quadram Corp.'a JT Fax PS/Q, s PC facsimile board reportedly compatible with the PS/2 Micro Channel. The board is said to turn a PS/2 Model 50, 60 or 80 or fully Micro Channel-compatible computer into s Group III-compatible facsimile machine. It is scheduled to be available in the third quarter and will be priced at less than $600.

• Graphics terminals from C. Itoh Electronics, Inc. in Irvine, Calif. Digital Equipment Corp.-compatible graphics terminals, the CIT334 and CIT344, are monochrome and color graphics terminals compatible with DEC's VT330 and VT340. The units include emulation of DEC's Sessions Support Utility features, which allow two separate sessions from one VAX to communicate over one port.

Users' choice in networking

ATLANTA — Users at next week's Comdex/Spring '88 can expect to find communications products that run the gamut from modems and communications links to desktop messaging systems and 10M-bit Ethernet over twisted-pair wire.

Among the scheduled introductions are the following:

• Localnet Communications will announce its D-Link local-area network twisted-pair and Ethernet communications line. D-Link Ethernet, an adapter card for IBM Personal Computers, PC XTs, ATs, Personal System/2s and compatibles, will reportedly provide connection to an Ethernet IEEE 802.3 industry-standard, 10M bit/sec. baseband LAN. The product uses very large-scale integration technology and will provide 100% compatibility with the Novell, Inc. Ethernet card. D-Link Ethernet costs $369.

A D-Link Ethernet DE-001 card for IBM PC XTa and ATs will also be introduced. The card reportedly shows an I/O throughput of 248.45K bit/sec. and is also available in a configuration for the PS/2. Prices will be $369 for the DE-001 and $469 for the D-001/2.

• A PC-based desktop messaging product will be introduced by Hyundai Electronics America. The Super-16CS is based on Hyundai's Super-16T XT-Turbo and bundled with voice-messaging functions and an integrated software package, Office Works from Alpha Software. The software requires 192K bytes of random-access memory. The half-size system card will operate in the PC terminal diskless workstation called PC Terminal and the Hyundai Super-286C AT-compatible. Total system price, including software, is less than $1,400 for a dual-floppy system.

• White Crane Systems, Inc. is slated to release Version 2.0 of Brooklyn Bridge, s utility for moving data between IBM and compatible microcomputers. It offers s dual-directory display file manager and includes four DOS utilities, as well as device drivers said to require one-tenth the memory needed in other file-transfer systems. The product can access printers, plotters, tape backup systems and other peripheral devices. Version 2.0 costs $139.95 for IBM PC compatibles and the Data General Corp. One Laptop. A special version for the Victor 9000 costs $199.

• An internal 9.6K bit/sec. V.32 modem card for the IBM PC is slated to be announced by Universal Data Systems. The Sync-Up V.32 promises full-duplex 9.6K bit/sec. operation through the use of an echo cancellation technique as well as s trellis-coded error-correction scheme. Both ayanchronous and synchronous autodialers are available, and the product includes built-in diagnostics and software-selectable configuration settings. Single-unit prices begin at $1,295.

• Triton Technologies, Inc. will announce Co/Session Version 3.0, which allows two PCs to work together as one or one PC to control another remotely. The list price for a two-user license is $249.

Check desk top for printers

ATLANTA — Desktop publishing capabilities are heating up the competition in the laser and impact printer fields. This year's Comdex/Spring '88 show, being held here next week, will showcase a slew of impact and nonimpact printers as well as image scanners.

• C. Itoh Electronics, Inc. will announce several additions to its current product line. Through a joint OEM agreement, Talaris Systems, Inc. and C. Itoh will offer Digital Equipment Corp. LN03 emulation capabilities on C. Itoh's Megaserve ion-deposition printers. The nonimpact 30 and 45 page/min printers will be marketed directly against the DEC Printserver 40 and will be available in the fourth quarter. Prices will range from $21,995 to $29,995.

C. Itoh's 5 page/min Jet-Setter II laser printer offers Hewlett-Packard Co. Laserjet II emulation and improved font handling and manipulation. The product will include six resident fonts and cost $2,195, excluding options.

The Prowriter C-310 and the wide-carriage C-315XP 300 dot/in. matrix printers have been upgraded to include Epson America, Inc.'s FX-86E or FX-286E, respectively. Both products will offer IBM Proprinter XL emulation. The C-310 and the C-315XP will cost $699 and $899, respectively.

• Ricoh Corp. will introduce the RS320 desktop scanner, which will be targeted at desktop publishing, PC and facsimile communications, computer-aided design and optical character recognition (OCR). The flatbed model is said to be capable of scanning at resolutions ranging from 60 to 360 dot/in. The unit has a bidirectional Centronics Data Computer Corp. interface and will have a suggested retail price of $1,100.

• Chinon America, Inc.'s Information Equipment Division will introduce the Deskscan 2000 overhead image scanner. It will be available in three desktop publishing versions and will include an OCR configuration. It will also come with a new Chinon facsimile package, called Scanfax. Prices range from $659 to $995.

• Acer Technologies Corp.'s LP-76 will debut. The laser printer is an HP Laserjet II series compatible, prints 6 page/min and delivers up to 300 by 300 dot/in. graphics resolution with optional memory, the company said. The LP-76 will come standard with 512K bytes of memory, expandable to 4.5M bytes. The Acer LP-76 costs $2,000.

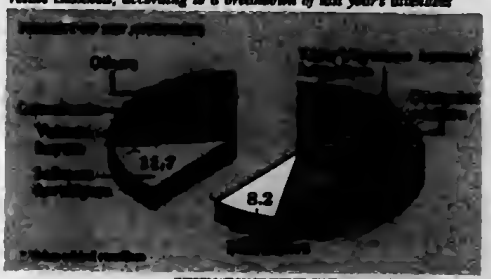
• Data Technology Corp. reconfigured its Crystalprint Series II page printer to include HP Laserjet II emulation. The Crystalprint Series II was designed for single-user desktop printing and high-resolution graphics applications. It prints at 6 page/min, features 300 by 300 dot/in. resolution and costs $1,999.

• Amstrad, Inc. will add three PC-compatible dot matrix printers to its product line. All three are industry standard, with dual parallel and serial interfaces.

The Amstrad, Inc. LQ5000DI 24-pin printer offers a 15-in. cartridge and prints at speeds of up to 289 char./sec. The LQ3500DI 24-pin printer will offer draft-quality output at 160 char./sec. and letter-quality text and graphics at 54 char./sec. A front-loading flatbed printer, the LQ3000DI, was designed specifically for labels, card stock and envelopes at speeds of up to 160 char./sec. Pricing information was not available.

Who'll be there

Comdex/Spring attendance is still dominated by those involved in resale channels, according to a breakdown of last year's attendees



INFORMATION PROVIDED BY THE INTERFACE GROUP, INC.
CW CHART

No need to look here for OS/2

ATLANTA — Users at next week's Comdex/Spring '88 will see plenty of DOS packages that will run in the compatibility box of IBM and Microsoft Corp.'s OS/2 but will be hard-pressed to find anything that is written specifically for the new operating system.

Most software vendors were tight-lipped last week about products they will be announcing at the show. Products scheduled to be introduced include the following:

• Toltran Ltd. in Barrington, Ill., is readying an artificial intelligence-based language translator and conversion software package for microcomputer users.

The Toltran System was designed so that vocabulary can be adapted to any specialized field, including the medicine, engineering, education, technical and military professions. Information is translated from English into a required language and back into English, and the developers maintain that words are analyzed singly and in context to determine the appropriate meaning.

The system runs on any dual-floppy IBM Personal Computer or compatible, and a version is slated to be available for Apple Computer, Inc. products. Pricing has not yet been made available.

• Micro Services, Inc. in Washington, D.C., will be introducing an add-on report writer for the Service Trac Productivity Management System. The report writer is said to allow users to export files to other data formats and to design their own custom reports.

The software runs under IBM's PC-DOS or Microsoft's MS-DOS and costs $1,295 for the single-user version. A network version is available for $2,595.

• Harvey is expected to announce two products for use with Hewlett-Packard Co. Laserjet and compatible printers. Hot Lead, a soft-font generator and editor, retails at a price of $195.

Harvey Type is a set of soft fonts that can be loaded on any HP or compatible laser printer. Both portrait and landscape orientations are provided. The package has a price tag of $149.95.

Comdex/Spring '88 product preview was reported by senior writer Alan J. Ryan and new products writer Sally Cusack.

Clone

FROM PAGE 1

additional, proprietary Microdirect I/O bus. Microdirect is currently negotiating with IBM for Micro Channel patent licenses, said Jon H. Hardie, chairman and chief executive officer.

"With the AT and the Micro Channel on the same motherboard, the user doesn't have to choose between the two," Hardie said. "This offers a bridge between existing and next-generation technologies, without sacrificing either one."

In addition to running Microsoft Corp. MS-DOS and OS/2, the Microdirect 386 I/O Express will offer two full-size Micro Channel add-in slots and six AT bus expansion slots. It will come standard with 16M bytes of random-access memory.

"It sounds like the ultimate clone," said Peter Tiege, an industry analyst at Dataquest, Inc. in San Jose, Calif. "It's a way of straddling both standards in one machine."

In addition to being the first micro to claim compatibility with both architectures, the Microdirect 386 I/O Express incorporates discrete semiconductor logic; other compatible vendors build systems around PC AT- or Micro Channel-compatible chip sets from vendors, such as Chips and Technologies, Inc.

Microdirect developed its own discrete logic because the company wanted to ensure full compatibility in the future with IBM's OS/2 Extended Edition, according to Hardie.

"We want to be as responsive to the market as we can, and discrete logic is much more flexible than chip sets," Hardie said. "We don't yet know what compatibility to OS/2 Extended Edition will be, so it seemed foolish to freeze an emerging technology into a chip set that might be off the mark."

IBM's own logic

IBM used the more expensive discrete logic in its PC line, then switched to custom circuitry for the PS/2 series as a way of competing on price with compatible makers, according to Andrew Rappaport, president of Technology Research Group, Inc., a consulting firm in Boston. The vast majority of compatible manufacturers, however, have stuck with using chip sets to keep system costs down.

Retail prices for the Microdirect 386 will begin around $6,000 and go up to $15,000 depending on the configuration, Hardie said. The firm is doing most of its own manufacturing.

Based on a 20-MHz 386, the Microdirect I/O Express bus handles only the I/O functions on the AT and Micro Channel pathways, upping throughput speed 10 times, Hardie said.

"The I/O on the PC today is the roadblock on the data freeway," Hardie said. "The CPU is fast now and capable of directly addressing CD-ROM, optical and 760M-byte hard disks in real time as random-access memory, but the I/O can only access them at about 512K byte/sec." Microdirect's proprietary I/O bus, Hardie said, offers I/O access at 5M byte/sec. via the use of a small computer systems interface.

It is unclear how users will react to a split-personality microcomputer, analysts said, especially if it does not offer strong price advantages over IBM.

"It sounds like a nice idea, but I don't really see the need for a PC with both the AT and Micro Channel bus," said Phillip Gordon, manager of office systems at Charles Schwab & Co. in San Francisco.

The Microdirect 386 comes standard with the Intel 80387 and Weitek Corp. 1167 coprocessors and interleaved memory. The system was designed to run with the 25-MHz 386 and can be upgraded by switching the CPU, Hardie said.

Second-class postage paid at Framingham, Mass., and additional mailing offices.
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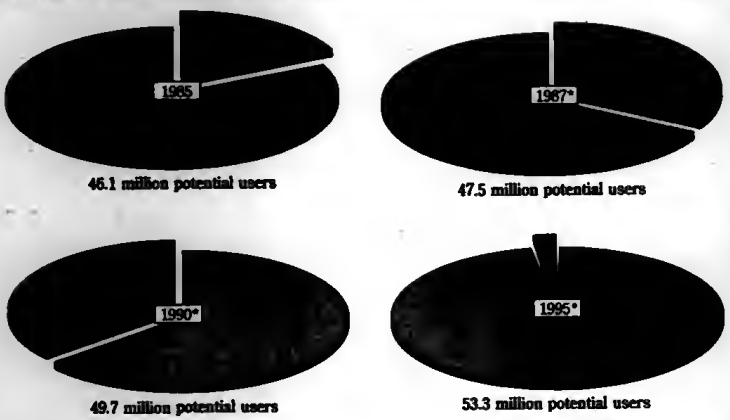
TRENDS

Electronic mail

By 1995, business use could approach the saturation point

ACTUAL USERS AS PERCENT OF POTENTIAL USERS



*Estimated

The number of people using electronic mail as a business tool will continue to grow at a rate of about 30% a year for the rest of the decade, according to "Electronic Mail & Micro Systems," published by International Resource Development, Inc. in New Canaan, Conn.

But only four of every 10 workers will have a real business need on the job for telex, facsimile, voice mail or any other computer-based messaging system, according to the newsletter's editor, Eric Arnum.

Based on recent U.S Department of Commerce statistics covering population and employment, Arnum estimates that only 46.1 million of the 107.1 million workers counted in 1985 are ever likely to use electronic mail on the job.

By 1995, assuming employment continues to grow, he predicts that about 44% of an estimated 122 million workers will use E-mail.

The newsletter also took a look at the use of various types of electronic messaging systems. Computer-based messaging systems, the most popular method today, will probably lose favor by 1995, dropping to third place.

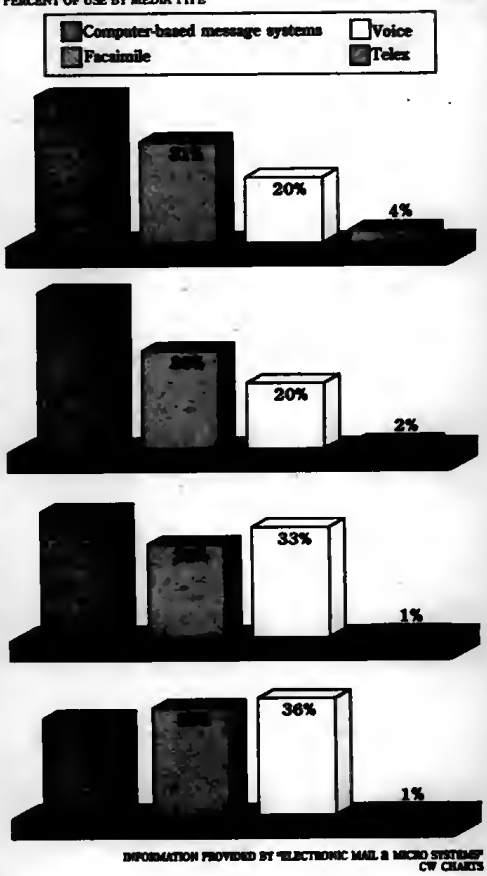
The 4.5 million facsimile users in 1987 could easily jump to 17 million by 1995, the newsletter claimed. Facsimile use is expected to pull ahead of telex and voice mail for a period, losing out to voice mail by 1990.

The voice mail market is expected to remain in the several-million-user range.

PATRICIA KEEFE

Users' media preferences should shift

PERCENT OF USE BY MEDIA TYPE



INFORMATION PROVIDED BY "ELECTRONIC MAIL & MICRO SYSTEMS"
CW CHARTS

INSIDE LINES

Step right up . . . Amdahl's three-ring circus is set for tomorrow. "In the center ring, we have a water-cooled CPU capable of 45 million instructions per second! Behind the juggling elephants awaits a universal controller ready for its own disk toss! And finally, below the trapeze artists, a humming box looking like a smaller version of IBM's 3380 J and K direct-access storage devices!" The company may not have its own big top, but that's what sources say the closely guarded Amdahl product rollout is expected to look like when the company finally lifts the canvas off its products Tuesday.

Prerelease me, let me code. Lotus's 1-2-3 Release 3 may not ship until the end of this year, but that will not stop third parties from preannouncing add-ons. At a press conference hosted by Lotus today, a number of third parties are expected to explain their planned wares, which were written using Lexf, a proprietary Lotus language that gives programs broader access to 1-2-3. And for those of you who are still confused about why Lotus is introducing a new language, the company will explain the benefits, in addition to the details.

What did Fred tell the doctor, and when did he tell him? Wang has notified selected users that it will phase out its slow-selling Professional Computer, Advanced Professional Computer and Professional Image Computer. Wang will no longer sell the three micros as stand-alone systems after June 30; they will only be available as workstations in a larger system configuration.

Way to go, Ollie! In the 14 days following Col. Oliver North's testimony on his role in the Iran-Contra hearings, IBM received its largest number of orders ever for its Professional Office System, or Profs, according to Paul Heesinger, chief technical officer at Computer Task Group in Buffalo, N.Y. Profs played a role in the hearing when it was revealed that the office automation system had created copies of North's communications even while he attempted to shred the paper trail that led to his door.

Cleaning their Windows. Microsoft will announce a version of its Windows operating environment this month, sources close to the company said last week. The software will not support Intel 8088-based personal computers and will be designed to work primarily with Intel 80286-based machines. Sources said the Windows upgrade will feature a variety of new drivers, including one for the 8514 graphics chip, and enhancements for existing drivers. The new version also has a memory management scheme to better accommodate large-memory applications. Apple Computer's attempts to block the sale of Windows apparently won't slow the new package's release.

Rode on the bleeding edge. Our mole in the Kremlin tells us that not only does IBM have an office in the city of golden onion domes, but sales reps there are busily taking orders — just for Personal System/2s. Old technology just will not do for Soviet users. Actually, we're probably talking back orders, since the PS/2 may not yet be approved for shipment behind the Iron Curtain.

Although Cullinet sources dismissed it as a continually occurring rumor, the CW hot line's hottest source on that company's shake-ups of the past two months insists that $5 presented the company from being acquired by Computer Associates. The source, who's tallied 1,000 on recent management departures, says Cullinet wanted $15 a share to sell out, but Computer Associates could only justify spending $10 per share because of the expense to be incurred in paying off golden parachutes and other compensation provisions that stretch far deeper into the company than usual. Computer Associates declined to confirm or deny such a bid, but the source said Computer Associates wants to make an acquisition quickly, and Cullinet is one of three candidates. Is J. R. Ewing behind it all? Will Bobby wake up in the shower? Is Pam hiding out in the Cullinet tower? Call the hot line at 800-3430-6474, or 617-879-0700, and help News Editor Pete Bartolik unravel these cliff-hangers.

THE NEW SUN WORKSTATION IS ALREADY POSTING SOME IMPRESSIVE NUMBERS.

On April 7, Sun Microsystems* introduced the world's first workstation that uses the full power of the Intel386™ computing engine.

The Sun386i.*

Already, it's a candidate for new product of the year. And no wonder.

The 386™ microprocessor was specifically designed to support workstations like this. With its advanced architecture, the 386 chip lets the Sun system run UNIX* and DOS applications at the same time. At full speed.

And we mean full speed. The Sun386i can run at 13,000 Dhrystones/second. Besides our 386 chip, Sun gave its workstation the full performance boost delivered by the complete Intel386™ computing engine: the 387 numerics coprocessor, 385 cache memory controller, and 380 direct memory access chip. The result is almost twice the performance of Sun's previous workstations.

Of course, the business benefits that Sun's workstation delivers are just as impressive. It lets users take advantage of applications running under SunOS as well as thousands of other standard UNIX and DOS software programs. As a result, Sun can offer its customers all the benefits of cutting-edge technology. With none of the risk.

So if you'd like to know how the 386 microprocessor can make the performance of your next design even more impressive, just call (800) 548-4725 and ask for Literature Dept. W447.

And we'll help you get the full power out of our Intel386™ architecture. By showing you how much we've put into it.

intel

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WE HELP PILLSBURY SLICE PRODUCTION TIME.

Based in Minneapolis, The Pillsbury Company is a diversified, international food company with a well-respected name and a distinct corporate goal: to be the best food company in the world. To achieve that goal, Pillsbury's production must respond quickly to the demands of a rapidly changing market. AMAPS software from Management Science America, Inc. helps them do that for their Totino's® brand pizzas.

"We were first attracted to AMAPS by the caliber of companies we found using the software," said Carl Wilson, Vice President of MIS for Pillsbury's U.S. Foods Division. "AMAPS had the flexibility and functionality we needed to run our plants. It also had the technological capability to interface into our overall computer-integrated manufacturing strategy."

With AMAPS, Pillsbury has achieved improvements in overall inventory reduction, management reporting, production flexibility and plant-corporate communications. Most importantly, the system has enabled Pillsbury to be more responsive to market changes.

According to Jim Shadley, Vice President-Operations, "Our information strategy is integral to our plan to be the best food company in the world. We have the systems in place now to help us achieve that."

To find out how MSA can keep your company rolling along smoothly, call Robert Carpenter at (404) 239-2000.

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